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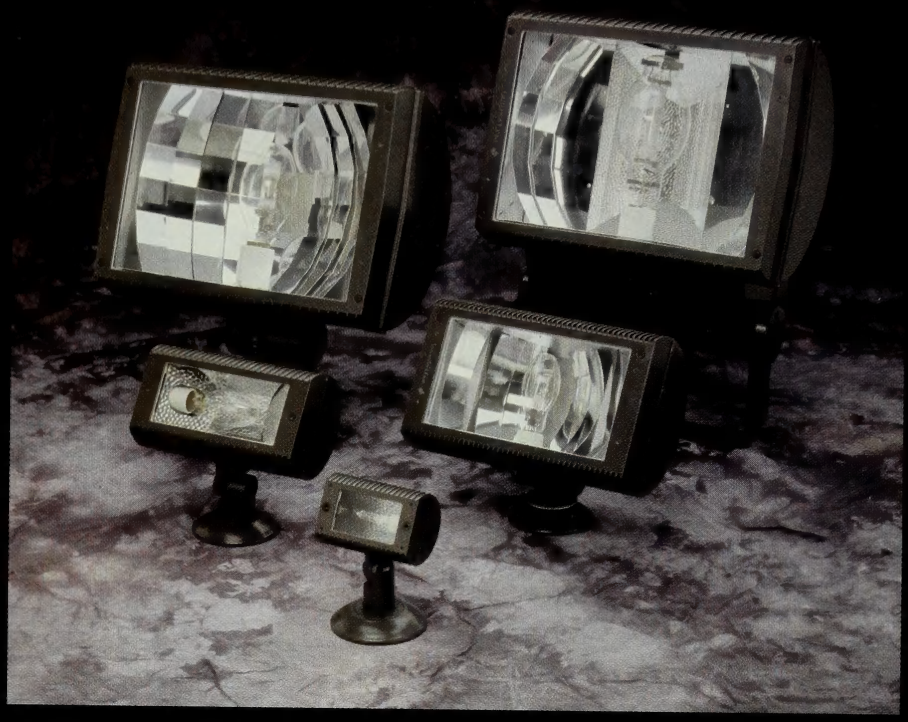
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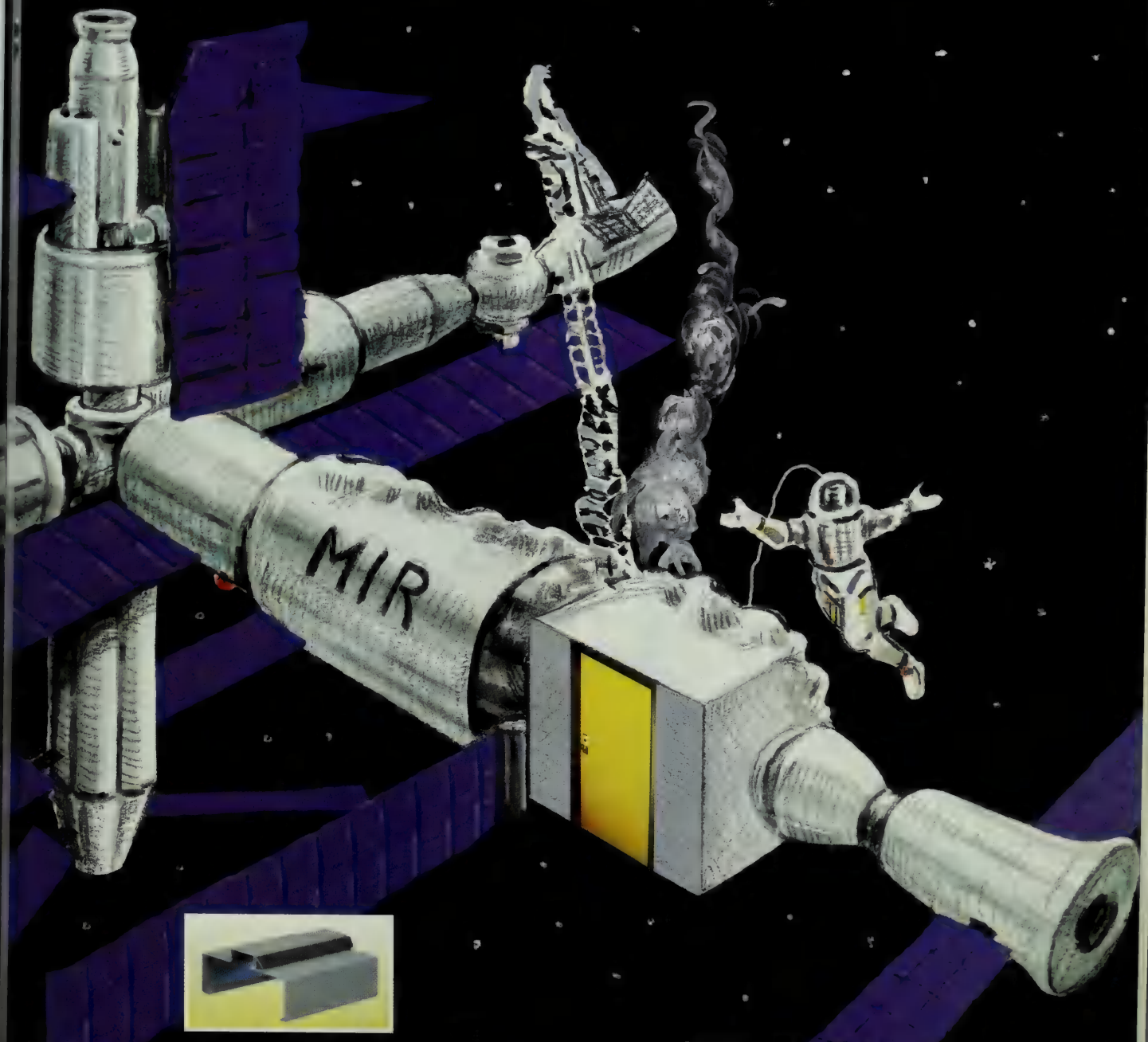
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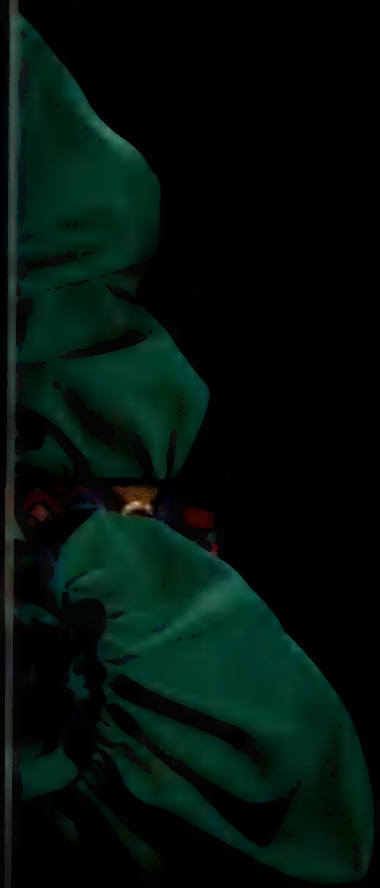
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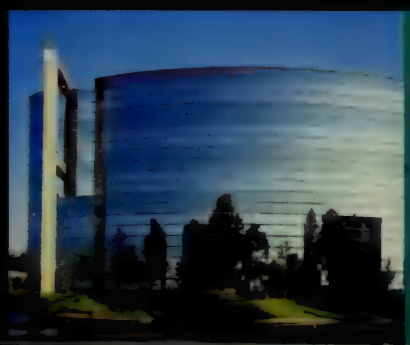


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details

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To: Project Manager
Re: One more little thing...

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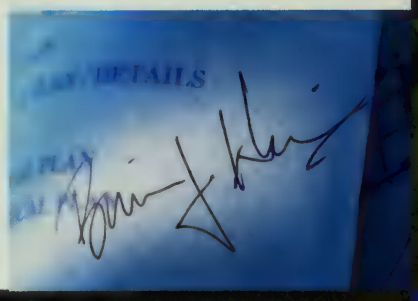
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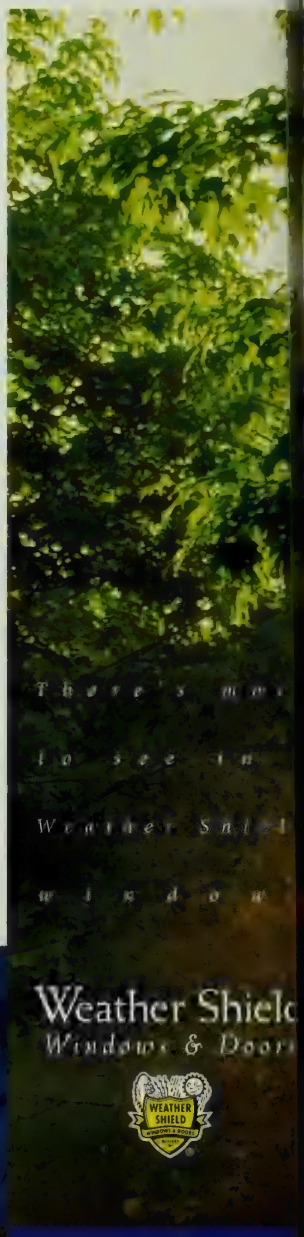
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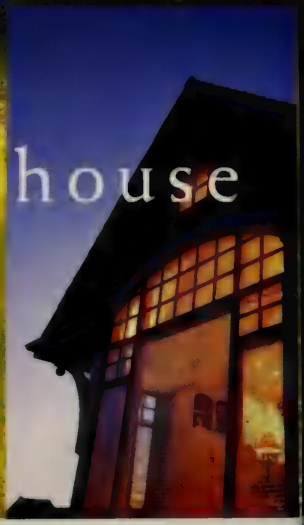




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EDITORIAL

A New Way of Seeing

BY ROBERT A. IVY, FAIA

A stranger said something that changed the way I will view cities, perhaps forever. Last December, I was talking to friends in front of a hotel on Connecticut Avenue in Washington, D.C., waiting for a cab. A doorman, overhearing our conversation, asked what we did for a living and why we were visiting the capital. We explained that we were architects in town for a meeting, summarily waved him off as a person looking for a tip, and piled into the next available car, eager for a warm dinner and a cool drink. There was, after all, the day's business to review.

The doorman's parting line, delivered without a trace of irony and with discernible pride in his hometown, was the zinger: "Enjoy it: you built it!" I looked up just as he smiled; then the cab lurched into a U-turn across traffic toward Pennsylvania Avenue and careened into the damp evening, the wheels humming through the rain.

We sat in silence as his words washed over us, then erupted in a collective shout at the profundity of his remark. "You built it." Three words. I stared out the window at the blurred lights of the buildings speeding by. From that moment, it was as if I could see each structure with fresh insight, unique and whole, the product of individual and collective energies.

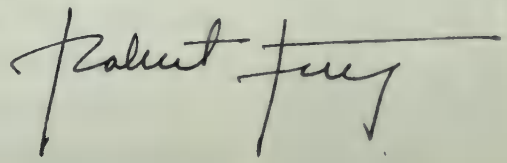
I scanned the blocks as you might scan a book, first by page, then by line. Each section of precast concrete or limestone marking the facades, each fanciful carving, each plaza and park—all had been informed by or inspired by or made by an architect. We passed rows of unnamed offices; famous buildings like James Hoban's president's house and James Renwick's gallery building; the Ellipse, the Mall, the Holocaust Museum. The buildings formed streets; the streets connected into a three-dimensional urban wonder. There was no component on the long, wet route that an architect had not touched.

Armed with that knowledge, that new way of seeing, I have been personally humbled and professionally challenged. If the city represents the highest expression of our collective persona, the most complex and meaningful repository of our culture, then we must enjoy it: not in a superficial way, but in the exercise of all of our professional strength and creativity.

Not that design can completely solve what architects refer to as "the urban agenda." Idealism, untempered by the realities of the marketplace, untried in social subtleties, and naively apolitical, can be harmful. Witness the wholesale demolition of high-rise, low-income housing taking place, a well-intentioned, widespread failure of a social experiment inspired by the work of a great architect—Le Corbusier.

In their quest for urban solutions, architects have natural allies in the nation's mayors, particularly those who gathered in November at Harvard for the Mayors' Institute on City Design. This group knows, as architects do, that good design can promote the health of cities and their citizens; with vision and political skill, mayors can transform the urban landscape in a way architects can only suggest. They also know, as architects often are unaware, the human limits of their dreams.

Mayors and public housing directors came to Cambridge to discuss "Housing and the City," an issue that professional participants like Michael Pyatok, FAIA, and Joan Goody, FAIA, grapple with every day. The room was often still as several components of a multidimensional equation sat around a common table, reaching for answers. The conference, a collective enterprise, proved that the doorman's remark, for all its wisdom, was incomplete: while it may be true that we built the city, we didn't build the city alone.





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LETTERS

Becoming an architect

In response to Robert L. Morgan's article "Becoming an Architect: Motivation to Fail?" [November, page 28], I say amen.

Throughout my years in architecture school, I was told by professors and students that architecture is labor-intensive and lacking in rewards. While looking for a job, I found very few practitioners willing to give advice on securing a position in the field I had sold my soul to in college. Upon completing the Intern Development Program, I spent my meager savings on the application to take the A.R.E. I soon discovered that I was not ready to take the exam, having spent much of my internship drawing stair and toilet details.

I worked for five firms before I found an office that cares about intern development. The firm has motivated me to learn and be excited about the field I came to love as a student. I hope that architecture's practitioners, educators, and interns will take it upon themselves to motivate the up-and-coming creative thinkers to succeed, grow in the field, and reap its rewards. Belittlement, outrageous exam prices, long work hours, and lack of support will have a negative effect every time.

—Stacy L. Rudd, Assoc. AIA
Austin, Tex.

I am a 1996 graduate of a professional degree program. To go through architecture school in the United States is to have a violent passion for the importance of the built environment. You couldn't keep me out of the field if you tried. However, a formal license to practice architecture is irrelevant in terms of my ability to have an impact on the built environment. Two years at any MBA program would provide a stronger foundation for that impact than would a three-year internship and a demonstrated ability to move some icons around on a computer screen. I say this with the utmost respect and passion for design and construction.

While our profession's economy cannot absorb the roughly 4,500 graduates every year, it seems to me that the AIA would welcome that kind of potential increase in membership. The AIA should work to keep those graduates as articulate representatives of the profession in whatever way they choose to contribute to it. Instead, the AIA relies on NCARB to determine its pool of potential members through an internship process that keeps the institute at arm's length.

As Morgan says, "The educational environment," presumably including internship, "drives away the very people who could implement change." The AIA needs to separate intern and associate issues. It shouldn't label associates second-class citizens, but should, instead, give them decision-making power and representation in the institute. Let the public know that we recognize the diversity necessary to function in the 21st century.

—Casius Pealer
New Orleans, La.

From NCARB's perspective

I would like to address the advantages of the computerized A.R.E.

The fundamental advantage of the computerized exam is its reliability. The Computer Mastery Testing method, developed by ETS, reduces what was once a gray area to a clear line separating candidates who pass from those who fail. The increased reliability reassures NCARB's member jurisdictions that new registrants have demonstrated entry-level competence, and it tells candidates that they have been assessed fairly. Other benefits include faster delivery of exam results and more opportunities to take the exam at a greater number of sites. Furthermore, the new exam closely resembles the way architects practice. Drafting skills were required to complete the graphic divisions of the pencil-and-paper exam, but as our profession increasingly embraces computer technology, fewer candidates tend to master drafting skills. (A practice disk helps testers who are not computer-fluent.)

Not only are these advantages expensive to implement but the number of test takers has been far below the figure we had projected. Whatever the reasons (exam fees, delayed completion) for this shortfall, the loss of income is affecting our budget for future exam development, and we are concerned that the natural growth of the profession is being stunted. All architects have a stake in seeing that the transition from the old exam to the new is clearly the way to go.

—Ann R. Chaintreuil, FAIA
President, NCARB
Rochester, N.Y.

A slap in the face

Frank Gehry's Guggenheim Museum in Bilbao [October, pages 74–87] is either a great building or its critics aren't getting much press. I expect the latter is the case. The museum looks like a giant chain mail–clad hand slapping Basque tradition and culture in the face.

It is possible both to respect the past without mimicking it and to make advances in architecture while working within a traditional architectural language. Gehry has seemingly imposed his own vision on the project without any consideration for regional traditions. Is this building ushering in a new architecture for the 21st century or is it a huge, crumpled titanium can littering a provincial Spanish city?

—Richard Battaglia, AIA
Portland, Oreg.

Risky business

Mark C. Friedlander's article on design-build [September 1997, page 20] neglects to fully discuss the issue of risk. Many architects feel that they are hindered from embarking on design-build ventures by the stringent requirements of their licensing bodies. They don't want to recognize that the main limitation is their inability to fund risk. The author's suggestion that risk is minimized by laying it off on the general contractor is naive and involves the assumption that architects can con clients into letting us undertake the project as consultants. We would then choose a contractor who will do half the front-end work and take all the back-end risk and pay us a fee for the introduction.

—Martin M. Poizner, OAA, FRAIC
Toronto, Ontario

When and where

Thank you for featuring modest residential remodeling projects in your November 1997 issue. There were, however, two inaccuracies in the article on the Follows Residence [pages 122–23] in the Silverlake district of Los Angeles. First, the Northridge earthquake occurred in 1994, not 1993. Second, the article states that "the house is only two blocks from the site of the recent L.A. riots." This is not true. The "site" of the 1992 civil disturbance is several miles south of Silverlake.

—Steven Owen Paige
Los Angeles, Calif.

Credit due

As the general contractor for the Flying Fish Café [November 1997, pages 153–55] at Disney Boardwalk in Orlando, Florida, I am proud to see the project receive the recognition it deserves. But I take exception to the project credits. McDevitt Street Bovis is listed as general contractor. This firm was facility contractor for the Boardwalk development, with the exception of four tenant spaces. Jack Jennings and Sons, Inc., served as tenant general contractor for the Flying Fish Café and three other projects.

—Howard Long
Jack Jennings and Sons, Inc.
Orlando, Fla.

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CIRCLE 10 ON INQUIRY CARD

SPEAK OUT Becoming an architect: opportunities abound!

LEE W. WALDREP



Lee W. Waldrep is assistant dean for academic affairs in the College of Architecture at the Illinois Institute of Technology. He graduated with a Master of Architecture from Arizona State University and completed a doctorate in counseling and student development at The American University. Waldrep is currently writing a book entitled Becoming an Architect: From Legos to Licensure.

If a young person who wanted to be an architect sought your advice, what would you do? Would you encourage him or her by sharing the positive aspects of the profession—the creativity and variety it offers, in addition to the opportunity to improve the quality of life by affecting the built environment? Or would you highlight the negatives—five to seven years of schooling, a minimum three-year internship, a daunting licensing exam, and long hours with low pay?

As an educational administrator, I meet aspiring architects every day. I encourage them wholeheartedly, providing them with the statistics and resources they need to make an informed career choice. I tell them that for trained architects, opportunities abound. An architectural education can be the springboard to a variety of careers.

Statistics from the United States Department of Labor project that by 2005 the number of positions available to architects will increase by 25,000 to a total of 121,000 jobs. National Architectural Accrediting Board (NAAB) statistics indicate that by 2005 there will be 60,000 graduates vying for those 25,000 positions. Based on these numbers, we should immediately shut down half the architectural degree programs before supply overwhelms demand.

But consider this: According to 1991 American Institute of Architects statistics, one-sixth (more than 8,000) of AIA members indicated that their primary professional activities were outside an architectural firm or private practice. Both the AIA and the American Institute of Architecture Students (AIAS) emphasize alternative careers for trained architects. In *Career Options: Opportunities through Architecture,* the AIAS lists more than 100 disciplines where architecture graduates can apply their skills.

As an architect, you may have colleagues who are earning their livelihoods in related fields. In fact, you may be one who has entered a field that builds on your education as an architect. In the spring issue of its college newsletter, Texas A&M University profiled two graduates who capitalized on their education as architects, one to become an Air Force instructor and one a sculptor.

Anecdotal estimates suggest that only 50 percent of graduates enter the profession and become licensed architects. If this is true, we should not be worrying about closing down architecture programs. Rather, we should be finding ways to show graduating architecture students how their hard-won skills can contribute to success in a variety of fields. Conversely, our schools and professional organizations should be networking with other professional and business groups, informing them of the broad, creative, problem-solving skills that trained architects possess. One need not become a licensed, practicing architect to make a contribution with these skills.

One resource designed to help future "educated-as-architects" graduates is *Careers in Architecture: Choices, Pathways, Success.* Published by the AIA, this book devotes a full chapter to "looking beyond architecture," highlighting careers in landscape architecture, interior design, lighting design, acoustical design, engineering, construction, urban and regional planning, environmental and behavioral research, and architectural history, theory, and criticism. As the chapter concludes, "the bottom line is that the building enterprise is an exceedingly broad field; the possibilities are endless."

So the next time a young man or woman comes to you inquiring about becoming an architect, you can feel confident giving him or her your complete encouragement. We need more architects who are not architects. As Leslie Kanes Weisman of the New Jersey Institute of Technology recently said, "Architectural graduates are in command of the powerful problem-defining and problem-solving skills of a designer. I am certain that they will be fully capable of designing their own imaginative careers by creating new definitions of meaningful work for architects that are embedded in the social landscape of human activity and life's events." ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*



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CIRCLE 11 ON INQUIRY CARD

MENTORS A director of information technology asks how to gain firmwide acceptance of rapid and frequent digital changes.

Linda Joy Weinstein, AIA, is president and principal consultant of CYBERtecture, a technology change agency. She is currently serving as chair of the AIA's national computer-aided practice PIA. She can be contacted via E-mail at cybertec@csi.com.



As the director of information technology in a large architecture firm, I see a divergence of acceptance of new and even mainstream computer technologies within the company. Our strategic technology plan calls for a great deal of change, including the adoption of several new systems. Keeping in mind that the effective life of most hardware and software is 18 months or less, how can my IT team implement these changes firmwide yet maintain a level of comfort for our end users—the staff?
—John Collier, Director of Information Technology
Ehrlich Rominger Architects
Los Altos, Calif.

Linda Joy Weinstein, AIA, responds:
You already took the first step on the road to digital calm when you developed a strategic technology plan (STP). This road map should clearly audit where you are now and what measurable objectives you want to achieve, and should align with your firm's core values, service philosophy, and business plan. The STP is not a static document but rather a framework that will allow you to evolve and refine your strategy at regular intervals. The STP requires you to assess your mission, your shared vision, and the comfort levels of the key people involved.

In order for you to demonstrate the value of technology in your firm, processes such as introducing new systems, implementing and mainstreaming them, and cycling out software and hardware need to become fundamentals of your department. The repercussions of a poorly managed software/hardware life cycle can be quite costly for design firms. Continuously track performance and measure improvements in your practice and service to your clients. Flag areas where your plan needs to evolve.

We all know that change is painful. Economist J. M. Keynes's words still ring true a half-century later: "The real difficulty in changing the course of any enterprise lies not in developing new ideas but in escaping from old ones." Architecture firms are made up of people, and people have expectations. People expect that any changes you plan to make will be difficult and will leave them with less power. Try to manage their expectations and allow them a sense of comfort in letting go of old programs and processes.

Following are some points to consider as you plan:

Training and retraining
Remember your superusers, the staff members who know computer technology well. They are a powerful asset in helping peers and in establishing a strong support system. Centralize training. Accumulate a body of learning that can be used as a consistent reference.

Inform and be informed
Help your users understand how important their knowledge is in transforming raw data into information. Understanding how their work affects the rest of your firm is critical. Inform everyone of impending changes and be specific about how you will help them through those changes. Don't hold back information from your staff on what is at stake here. It costs a lot to keep trailing-edge technologies in place. Measure progress and let them know how their efforts in embracing new methods and systems have improved the whole firm.

Balance power and knowledge
To insure management's buy-in and support, confirm that your strategic technology plan aligns with the firm's business plan. New tools should provide staff members with better information, empowering them to make decisions. IT and firm management need to let go. Encourage people to utilize their new abilities by making decisions themselves and taking responsibility. To lead this process of change, you must support this process of change.

Assessing your technology and core values may be simple enough for you to execute, but other aspects of your technology plan may require input from a consultant. You are making a significant investment in information technology, and a consultant can bring rapid insight to your team. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*



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CIRCLE 12 ON INQUIRY CARD

PULSE RECORD readers were asked: Should more architects lead design-build teams?

YES: 90%

Yes: This month's question brings to mind an article I wrote for *Fine Homebuilding* in 1987. Here's an excerpt: In design-build ventures, "the design process is extended onto the site, and we are able to avoid the locked-in mind-set that governs most building projects once they are committed to paper. Throughout the construction process, we can adapt the design to whatever exigencies arise. In this way, the architect-builder becomes part of the drama that unfolds as a structure grows and assumes its many-faceted character. [The] process results in a more appropriate product."
—Steve Badanes
Jersey Devil
Palm Springs, Calif.

Yes: Design-build is, I believe, the most effective way to meet clients' aesthetic and functional needs, especially in residential work, and it offers architects an opportunity to provide enhanced services and increase profits. As the owner of a design-build firm, I have found that construction-cost estimates can be provided to clients much earlier in the process. What's more, with an intimate knowledge of the design intentions, my firm is better able to value-engineer a project without compromising its integrity.
—Michael Pagnotta, AIA
Ship Bottom, N.J.

Yes: The person leading a team should have a vested interest in the outcome of a project and be familiar with the design intentions. This is not always the case when nonarchitects are in charge. I am constantly dismayed by the way architects relinquish their responsibility for a project to others. If an architect doesn't have faith in his or her own abilities as a master builder, why should anyone else?
—Michelle Balfoort, Architect
Fort Lauderdale, Fla.

Yes: I believe that design professionals have allowed the construction industry to steal too much of the design process. Contractors often use "construction management" to control the design process, limiting the designer's contact with the client and risking the liability of the design team. I believe that construction managers try hard to avoid the issue of liability. If designers must assume liability for their projects, they should be in the lead position.
—Mitch Miller, ARA, CDT
Batten Architects
Bethlehem, Pa.

NO: 10%

No: As stated, this month's question is too simplistic. It does not acknowledge the complexity of the issues involved in design-build. Size, location, and organizational structure are among the major factors in a firm's suitability to take on the lead role in a design-build situation.

My feeling is that architects typically do not have the fiscal resources or the day-to-day construction management experience to lead design-build teams. This is often a consequence of a given architect's education, experience, and disposition. Our schools do little to help architects learn how to use a hammer or hang drywall, for example. Contractors, on the other hand, tend to have hands-on experience in the building trades.
—J. Michael Bergen, AIA
Architecture+
Troy, N.Y.

This Month's Question

Should state governments require continuing education for licensure of practicing architects?

More and more state governments now require continuing education for maintaining a license to practice architecture. Currently five states—Alabama, Arkansas, Florida, Iowa, and Kansas—require continuing education, and Louisiana maintains a voluntary system. As of the year 2000, two more states—Tennessee and South Dakota—will require it. The trend is growing, with at least 24 states seriously weighing legislation.

Should state governments require continuing education for licensure of practicing architects? ☐ Yes ☐ No

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Which CAD software outgunned *all* others in head-to-head competition?

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MiniCAD 7: Winner of the 2nd as "BEST OVERALL ARCHIT

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The annual 3D Designers CADD Shootout competition called together design teams representing 12 of the world's top CAD softwares for a head-to-head competition judged in 22 categories. The winner, as judged by a panel of 12 real-life architects, CAD professionals and industry experts along with more than 400 architects and professionals in attendance, walked away with the title of "Best Overall Architectural CADD Software" and the prestigious CAD Cup Trophy.

Each 3-member design team was challenged to flex their CAD software muscle by producing a full design project complete with elevations, perspectives and QuickTime animations, in only three hours.

The Case:

The goal – to produce a New England-style church, built on a slope facing the sea – was not revealed until the start of the shootout. And, to add realism to the event, aspects of the design criteria were changed every 30 minutes for the first 1.5 hours of the competition!

The Champion:

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At right, review the minute-by-minute development of the winning design created using MiniCAD 7 in only three hours that beat AutoCAD, TriForma, AllPlan and eight other leading CAD softwares. Now, imagine what ***you*** can do with this affordably priced, easy-to-use, powerful design tool in your hands when ***you're*** working against the clock!

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Ranking	Program	Retail Price
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2	AllPlan	$4,995
3	Triforma	$5,325
4	ArchiCAD	$4,995
5	Arris	$4,250*
6	DataCAD	$ 249
7	DenebaCAD	$ 799
8	Architrion	$4,000
9	Architech.PC	$3,500
10	Arc+ / Virtus	$1,595
11	BuildersCAD	$1,995
12	AutoCAD 14	$7,250*

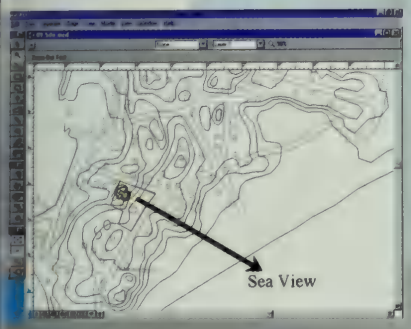
*Includes plug-in



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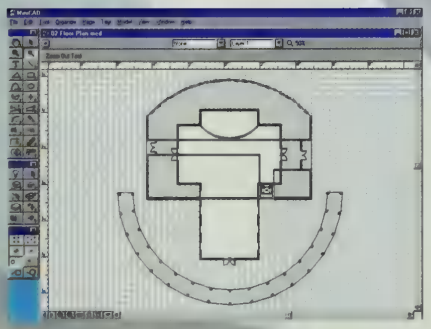
Designers 3D CADD shootout, Build Boston, Nov. 97

What can be accomplished in 3 hours using MiniCAD 7 ...even when the client makes changes every half hour?



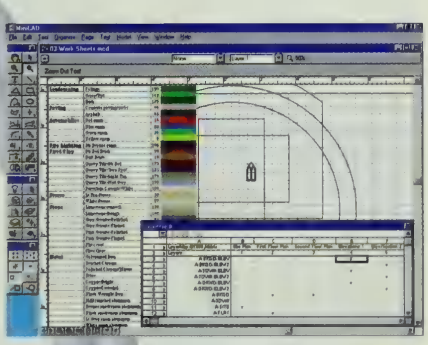
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liniCAD 7 quickly and easily imports the xisting site plan as defined by contest ponsors, using it as an accurate basis for site elineation. This illustrates MiniCAD 7's bility to use and augment data files from ther CAD softwares - on Windows *or* lacintosh.



0:45:05

MiniCAD's powerful hybrid design environment allowed the MiniCAD team to develop in 2D and 3D simultaneously. Here you see the exterior walls of the project developed in just under an hour.



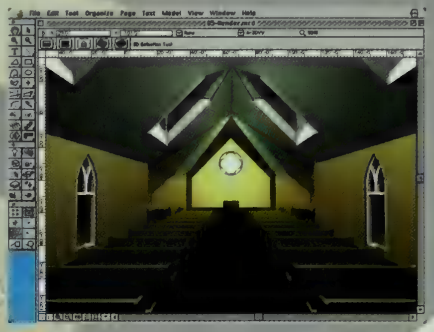
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As the real nuts and bolts of the design are worked out, MiniCAD 7 keeps highly detailed worksheets and material takeoff lists.



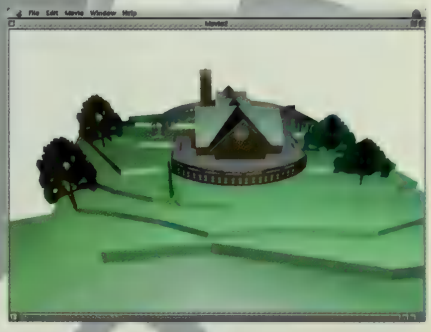
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The MiniCAD team used MiniCAD's unique 'Layer Linking' capability to easily create this elevation and to instantly view in 3D any changes made to the plan.



2:03:00

Fully-rendered interior design generated in MiniCAD 7 with the Lightworks 3D plug-in. This feature greatly enhanced the design presentation by allowing for a variety of real-life visual effects such as multiple light sources, lighting effects and shadows.



2:55:30

Final output, a QuickTime movie created with MiniCAD 7's built-in QuickTime animation feature depicts the beauty and architectural majesty of the MiniCAD 7 design. The judges panel was impressed too, voting MiniCAD 7 "Best Overall Architectural CADD Software", ahead of competing softwares costing thousands more.

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YOSHIO WHO? MOMA'S NEW ARCHITECT

What is likely to be the most prominent American architectural commission of the next several years has been awarded to Yoshio Taniguchi, an architect who is little known outside his native Japan. On

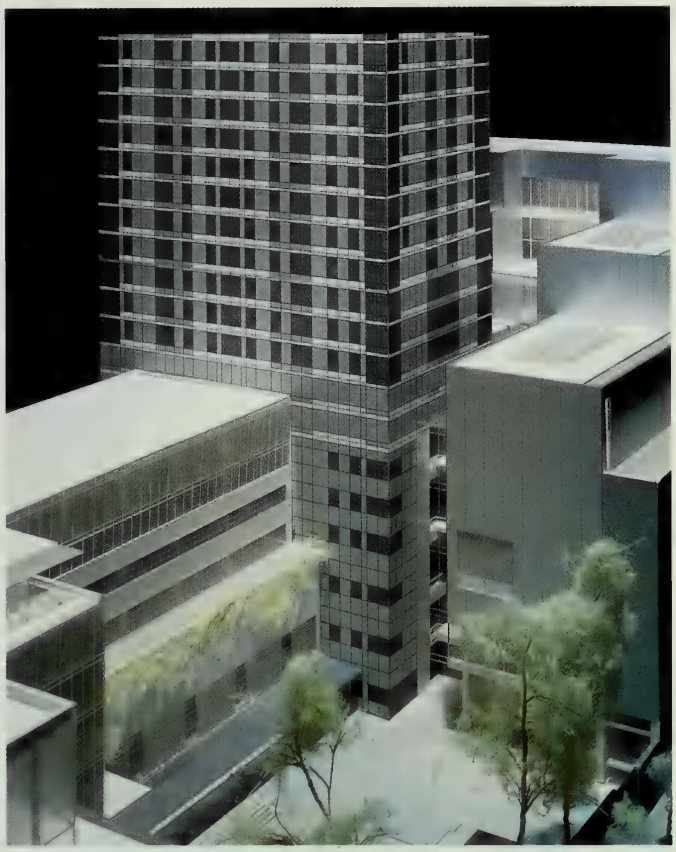


December 8 the Museum of Modern Art (MoMA) in New York City unveiled Taniguchi's preliminary design for an expansion, which may ultimately more than double the museum's current 73,000 square feet of exhibition space.

Taniguchi was chosen after a controversial 18-month-long selection process. The museum conducted a worldwide search, then invited 10 architects to submit conceptual design ideas. The list was then winnowed to three: Taniguchi, Herzog & de Meuron, and Bernard Tschumi. After further design work, museum trustees and staff selected Taniguchi's scheme. The architect "demonstrated exceptional creative vision," says museum chairman Ronald S. Lauder.

An exhibition of the 10 finalists in 1997 was derided as inscrutable, but the complexities with which the competitors struggled came out of a directive to do nothing less than "rethink the idea of the Museum of Modern Art," according to Glenn D. Lowry, the museum's director.

Taniguchi has made a reputation in Japan as a designer of museums of austere grandeur, many of them for private clients. His work includes the Nagano Prefectural Museum (1990), the Marugame Genichiro-Inokuma Museum of Contemporary Art (1991), and the Toyota Municipal Museum of Art (1991–95). He was trained at Harvard's Graduate School of Design as well as Keio University.



Taniguchi was the least known of the competing architects, and the MoMA addition will be his first project outside Japan. Herzog & de Meuron, based in Basel, Switzerland, has built an international reputation for projects of almost childlike minimalism [RECORD, May 1995, pages 84–91]. Bernard Tschumi, a Swiss-born architect who is dean of Columbia University's architecture school, is best known for his Parc de la Villette, in Paris. [See pages 86–95 for more on Tschumi.]

The MoMA job is so complicated because both the program and the site are complex. The Museum Tower, which Cesar Pelli completed in 1984 along with an addition and reorganization of the museum, stands squarely between the site the museum acquired and its existing buildings. Taniguchi has wrapped the tower with most of the major galleries, including those for MoMA's permanent collection. Reflecting a renewed commitment to the art of the present, the design directs visitors first to galleries featuring contemporary art.

Taniguchi will remove the escalator lobbies Pelli added to the museum, returning the original 1939 Philip L. Goodwin and Edward Durrell Stone building to its former relationship with Philip Johnson's 1952 sculpture garden.

While little of Pelli's remodeling of the museum will survive, Taniguchi's design inserts the vertical circulation into Pelli's tower and slips an atrium around it, which has the curious result of making the tower visually freestanding for the first time and thereby more prominent (photo above). The new galleries will be larger and taller; required zoning setbacks are claimed as skylights, offering a mix of "white cube" and naturally lit galleries. A 1964 addition by Johnson will be retained, but another 1952 addition will be sacrificed.

The museum has not yet finalized the size or budget of the project but expects to complete the building in time to celebrate its 75th anniversary in 2004. *James S. Russell*

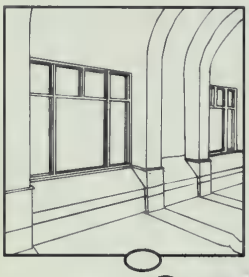
FUNDS FOR FEDERAL BUILDINGS CUT **Congress was rough on funding for federal buildings in fiscal 1998. Lawmakers sharply trimmed construction programs at many agencies.**

A grim picture emerged at the General Services Administration (GSA), which will receive no funds for new construction in 1998. Last year, GSA got $658 million. The Bureau of Prisons' facilities account was sliced by 36 percent to $255 million. The Department of Veterans Affairs saw its construction budget chopped by 29 percent to $178 million, although it did receive $4.3 million for advanced planning and $3.5 million for design of future projects.

Though funding for these bellwether programs is down, there are bright spots. The National Park Service construction budget was raised by 8 percent to $215 million, including $15 million for planning. And the State Department will get $9.5 million to design a new U.S. embassy in Jerusalem.

Other agencies that traditionally have not been big builders are becoming more active, according to Stuart Binstock, the AIA's vice president for federal affairs. He cites the National Institutes of Health, where a massive renovation and expansion of the Clinical Center is under way. Said Binstock, "The market has shifted, and our members who do federal work are keenly aware of that." ***Tom Ichniowski***

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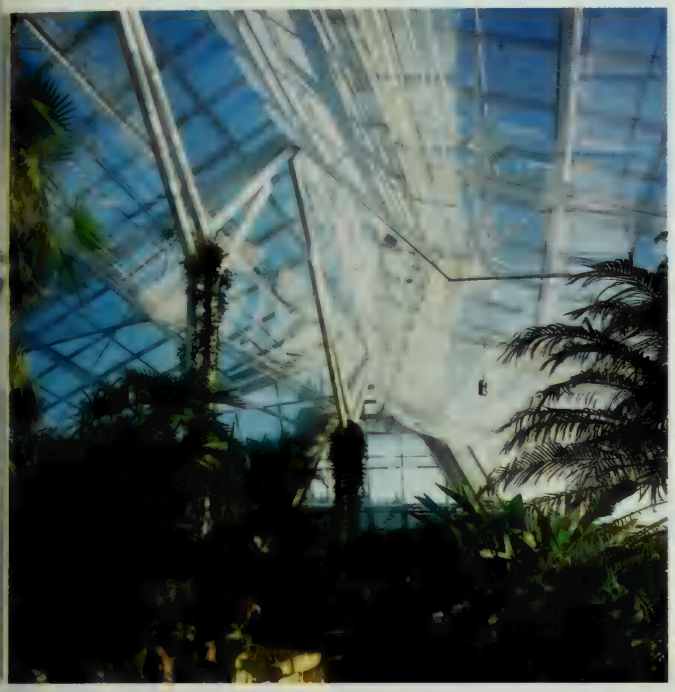
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CIRCLE 15 ON INQUIRY CARD



BUTTERFLIES FLUTTER BY IN NEW GLASS CONSERVATORY

Just a few miles down the road from the honeymoon haven of Niagara Falls, Canada, is a welcome antidote to the kitsch of this border region: the Niagara Parks Butterfly Conservatory, which is located in the Botanical Gardens of the Niagara Parks Commission. Designed by Baird/Sampson Architects of Toronto, the 11,000-square-foot home for butterflies is the largest facility of its kind in North America.

The expressive glazed steel structure, a contemporary cousin of the Victorian glass house, perches on a terraced Wiarton limestone podium, which subtly invokes the exposed strata of the nearby Niagara Gorge.

Thousands of butterflies—some raised on-site, others brought in as chrysalides from Mexico, the South Pacific, and other butterfly conservatories—are regularly released into the display environment through a glass "emergent case" that is visible to the public. The butterflies can be viewed in flight up close from a meandering pedestrian path, which wends its way through a simulated tropical environment past a dramatic 30-foot waterfall.

The 52,000-square-foot program also includes a 200-seat auditorium, presentation rooms, 17,500 square feet of greenhouses, and a service building containing laboratories and teaching facilities. The $9 million facility has already proven a huge financial success. Attendance at the conservatory exceeded expectations by 40 percent in the first 11 months of operation. *Beth Kapusta*

CHARRETTE PROMISES RENEWAL FOR MIAMI'S 'DECORATOR'S ROW'

Miami's Design District is finally rebounding from a two-decade-long decline. Buyers flocked to this once flourishing "decorator's row" for furniture, tile, and textiles until a plague of urban ills forced the showrooms to move out. Most headed about 25 miles north to an expressway-handy complex in the Broward County town of Danian.

Now a new community-based plan developed by the Miami firm of Duany & Plater-Zyberk (DPZ) holds out promise for renewal. The plan was developed during a six-day charrette—an intensive workshop pioneered by DPZ—that drew hundreds of participants to the Design District in late October. Elizabeth Plater-Zyberk, who is also dean of architecture at the University of Miami, led the effort to forge a new physical identity for the district with recommendations for height limits and setbacks. The charrette was unusual in that the planning area was expanded to include an additional 20-block stretch of Northeast Second Avenue, incorporating the main business district of Miami's Little Haiti.

The idea for the charrette came from Craig Robins, who owns the district's most significant historic building, the newly restored 1921 Moore Building (below), as well as 11 other structures. A lawyer-turned-developer, Robins has been influential in restoring Miami Beach's Art Deco district, particularly in projects done in tandem with Island Records' Chris Blackwell. Robins's hope is to give the Design District, where to-the-trade-only businesses have long dominated, a new identity as a showcase for artists, designers, and craftspeople that is open to all. *Beth Dunlop*



THROUGH THE LEIPZIGER LOOKING GLASS **An up-and-coming team of young architects has done what most only dream of: they have won a major urban commission in an international competition. Their solution challenges the avant-garde in a country known for daring design.**

The boisterous Berlin firm of Hufnagel Pütz Rafaelian Architects solved the riddle of how to build a museum of fine arts in the city of Leipzig, Germany, that is free of hackneyed historicism yet responsive to 1960s postwar renewal. Their method is material.

A glazed cube is planned to peek out over the rooftops of the city. First transparent, then matte, then glittering, it will house one of Germany's most important painting collections. The designers combined classical urban design with titillating translucency, squeezing the museum into a tightly hemmed-in urban fabric. The firm's proposal sets up a sensible hierarchy for future development, with the museum occupying the city's top architectural echelon like a modern-day, crystalline cathedral. Says Michael Rafaelian, "The city will assimilate the museum just as it did the medieval churches centuries ago. It will become the veritable kernel of urban life."

The firm's long-term involvement in the project will depend on its ability to accommodate small-scale shops around the museum's perimeter, making it a fully integrated cultural quarter, not just an isolated architectural island. ***Claudine Weber-Hof***

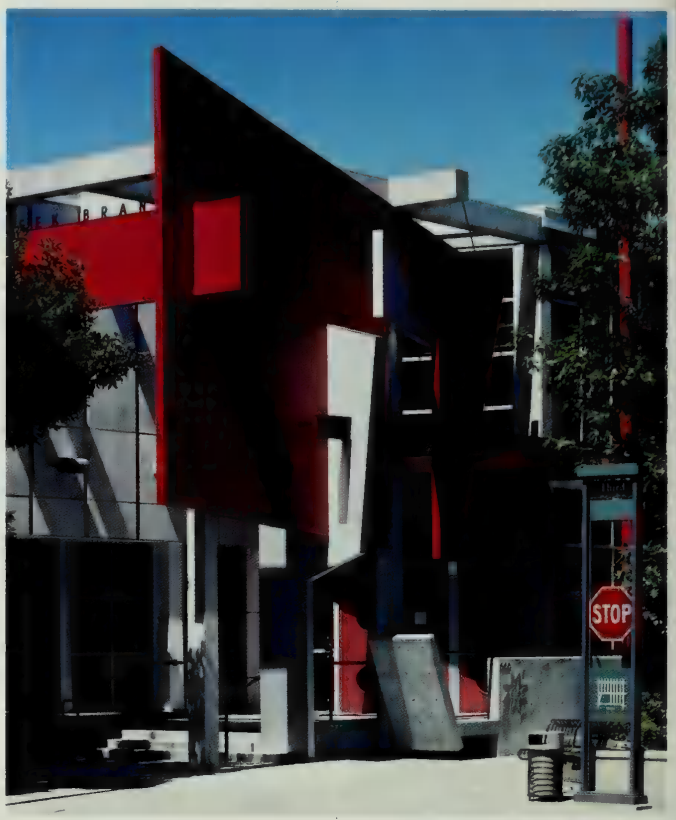
DENVER ARCHITECT STRIVES FOR PUBLIC BUILDINGS THAT OPEN THE MIND

In 1992 Denver architect Michael Brendle, AIA, was asked to turn a drab, 1960s branch library—called "the mausoleum" by some patrons and workers—into a place that people might actually want to visit. In his bold, industrial-inflected redesign for the Ross Cherry Creek Library, Brendle created a new facade with glass-block windows, exposed trusses, and colorful geometric forms (right). Attendance at the library, in an affluent shopping district, has increased ever since, and Brendle's redesign has won several awards. (Michael Brendle Architects was named 1997 Firm of the Year by the AIA's Western Mountain Region.)

Working primarily in the public realm—designing libraries, schools, churches, and recreation centers—Brendle has brought postmodern aesthetics to Colorado, not known for its embrace of assertive Modernism. But Brendle insists he isn't out to shock, even as he strives for architecture that "opens the mind."

"I want people to sit up and take notice," he said, "but I hope they feel comfortable in my buildings." Most public buildings, he believes, have just the opposite effect. "They're not fun," he says. "They're not enjoyable buildings to be in or go to. They take themselves way too seriously."

Brendle is currently working on several Colorado projects: public libraries in Fraser and Lafayette; an events center at Northeastern Junior College in Sterling; an environmental learning center at Colorado State University in Fort Collins; a roadside tourist center near Trinidad; and a library remodeling in Littleton. The firm was recently commissioned to design its first out-of-state project, a new public library in Johnston, Iowa. *David Hill*





PSFS, A MODERNIST ICON, TO BE CONVERTED TO A HOTEL One of the most daring skyscraper designs of its time, the 1932 PSFS building, in Philadelphia, is slated to be converted from corporate headquarters to a 585-room hotel. Designed by George Howe and William Lescaze, it was a key building in the development of a uniquely American approach to Modern architecture—innovative in wiring, glazing, and air-conditioning—and one of only two American skyscrapers included in the Museum of Modern Art's pioneering 1932 International Style exhibition.

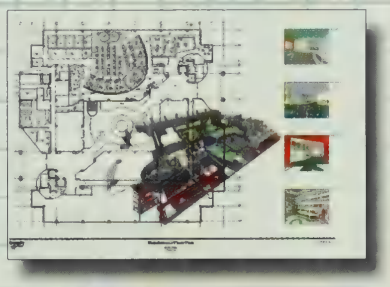
The building's small floor plates—on the order of 8,000 square feet—are regarded as more suitable to a hotel-room layout than to office space. PSFS is near the successful new convention center, which has created a room shortage. Also, the building, the Philadelphia Saving Fund Society's headquarters until its collapse in 1992, is empty. But conversion to a hotel may be far from an ideal future for the landmark. Everything from the Bauhaus-inspired Cartier clocks on each floor to the furnishings in the banking hall were conceived as a unified design. Its machined detailing and crisp elegance bespeak a place of work, an aesthetic fundamentally at odds with the domesticity aspired to by hotels.

The developers, Philadelphia-based Preit-Rubin and the Loew's hotel chain of New York City, have hired Bower Lewis Thrower as architect and Daroff Design as interior designer. Both are well-established Philadelphia firms, but neither has a track record in the sensitive reinterpretation of such a prominent landmark. The design is not finalized; indeed, a number of issues, such as a proposed addition and the mounting of a Loew's sign along with the famous PSFS sign that crowns the building, are under negotiation with the local landmarks board.

Among the great interior spaces that will require alteration are the three-story banking hall, which will be remade as a banquet space. A rooftop board of directors suite—which until the collapse of the bank was intact down to its original architect-designed furnishings—will house catered events. The conversion has attracted little protest in the local historic preservation community. But once the design is made public, it will certainly be scrutinized intensely. *James S. Russell*

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CIRCLE 16 ON INQUIRY CARD

NATIVE TRADITIONS BUILT INTO HEALTH CENTER DESIGN

A healing circle and a sweat lodge will be incorporated into the design of a community health center being built for the Mi'kmaq aboriginal community at Eskasoni in Cape Breton, Nova Scotia. The $8 million project for the Eskasoni Health Care Commission is the first in the province to embrace traditional First Nations healing practices.

A specialist in health-care-facilities architecture, William Nycum & Associates of Halifax, developed the program and master plan. The 35,000-square-foot single-story structure is slated for construction in mid-1999.

A circular area at the health center's approach will be used for ceremonies to contact the Great Spirit; Mi'kmaq lore holds that the power generated in the circle will promote healing. The area will be surrounded by alder, hemlock, and juniper trees.

Mi'kmaq shamans will share offices in the health center and their herbal medicines will be stored on site.

The center will accommodate all the primary care needs of the 3,300 Eskasoni Mi'kmaq, including ambulatory care, emergency services, social work, health promotion education, and community health services. The center also will house 28 beds for long-term care.

A dome-shaped sweat lodge built from wood with the bark side out will stand behind the main structure. Heated by a fire pit at its center, the sweat lodge is designed to hold 12 people. Its main entrance will face the rising sun at the summer solstice.

Project manager Jim Torbert said that the design principles guiding the project include the seasonal cycles, natural materials, the earth, natural light, the circle, animal lore imagery, and the river as the course of life. *Andrew Safer*



WALTER BURLEY GRIFFIN: INSPIRATION TO THE PRAIRIE SCHOOL

Frank Lloyd Wright's last major public building, the Marin County Civic Center (1957), is a knockoff of Walter Burley Griffin's first Australian building, Newman College, built in Melbourne in 1915 (drawing above). Wright and Griffin (1876–1937) both designed a seemingly endless colonnade of arches reaching toward a low-slung dome and contrasting spire. Visual energy courses along the colonnade to distill at the dome and explode heavenward up the spire. This dynamic made Wright's building serve perfectly for the establishing shot in the 1997 future-world thriller Gattaca. But hardly anyone had ever heard of Griffin's wonder—or Griffin.

Until last October, that is, when the school of architecture at the University of Illinois, Urbana, held a three-day symposium on Wright's former assistant aimed at establishing this Prairie School designer as an architectural force in his own right. The conference covered Griffin's work on three continents—the United States (1906–13), Australia (1913–35), and Northern India (1935–37).

Several presentations explored a Prairie School surprise: the strong religious and spiritual currents that run through much of Griffin's work. The Stinson Library (Anna, Illinois) is at once temple, rune, and altar. Griffin's competition-winning design for Australia's capital, Canberra, is arrayed like a cosmic mandala, and his late designs employ many Hindu forms.

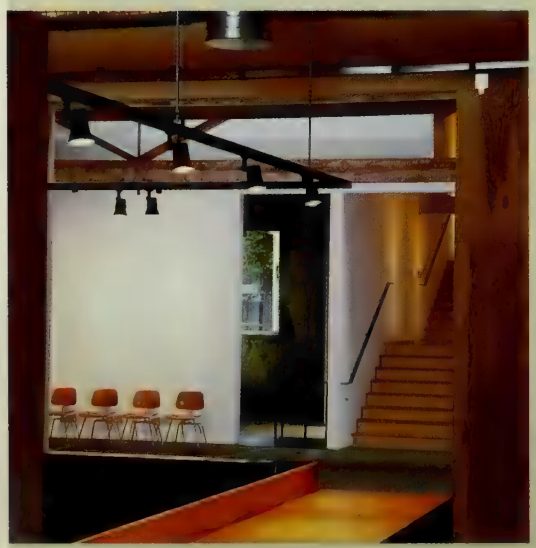
The conference organizer, professor Paul Kruty, suggests that the lesson for contemporary architects is that decoration can be seamlessly incorporated into a formalist aesthetic.

Next October a second conference on Griffin will be held at the University of Melbourne. At the same time a documentary on the architect by PBS producer Alison Davis will be released nationally as a companion to Ken Burns's PBS series on Wright. *Richard D. Mohr*

"LATTELAND" IS VIEWED THROUGH "BEANTOWN" EYES **In a twist on regional AIA awards programs, Seattle recently assembled a jury of architects from Boston. The result: recognition of projects that go beyond skin-deep beauty to focus on issues architects are grappling with in both regions.**

Jurors M. David Lee, FAIA, Sheila Kennedy, AIA, and Robert Campbell, FAIA, reconstructed their decision-making process for an audience of 800 local architects—including mayor-elect Paul Schell, Hon. AIA. Individual projects became the starting point for an often humorous discussion of larger themes.

One hot topic was the search for authentic regional design. "Boston is slowly converting itself into 'Boston-land' in the rush to commodify its past," said Campbell. To avoid the same pitfalls, the jury cautioned Northwest architects to move beyond "fetishized" wood details to address Seattle's identity as a regional center.



Five of the eight merit awards highlighted urban design issues such as stimulating downtown housing and creating new civic spaces. Hewitt Isley won merit awards for two mixed-use waterfront projects, the Bell Street Pier and the Harbor Steps Apartments. According to Lee, these projects treat downtown not as "a sick patient awaiting resuscitation" but as a vibrant place to work and live.

George Suyama Architects was honored for a design that combined office, retail, and gallery spaces (left). It was praised for the deft handling of its urban facade, a restrained material palette, and creative programming. It also answered the jurors' call for a little more "grunge" as an antidote to the treacly niceness of Seattle architecture. ***Sheri Olson, AIA***



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CIRCLE 17 ON INQUIRY CARD

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PARTICIPATION CONTINUES TO GROW IN CANSTRUCTION FOOD DRIVE

In 1992 the first CANstruction food drive was held in Seattle, with architects creating a spontaneous exhibit from the cans collected: a topographical map of Washington State.

One year later, New York and Denver turned CANstruction into a design-build competition and CNN covered it. By the next year, with John F. Kennedy, Jr., hosting the awards ceremony in New York City, CANstruction was officially a major event. Nineteen cities and hundreds of architects participated in CANstruction 1997, sponsored by the American Institute of Architects and the Society of Design Administration.



Top and above: two designs created by New York City firms for the 1997 CANstruction competition.

In New York City, 31 firms competed. Their colorful, whimsical, startlingly realistic designs, using 50,000 cans in all, included a fish leaping out of water; a bed complete with headboard, footboard, pillow, quilt, and nightstand; and a classic Ford convertible with running board and whitewall tires.

Cheri C. Melillo, from Butler Rogers Baskett in New York, is the force behind CANstruction's rapid expansion. As soon as she heard about the Seattle food drive, Melillo envisioned what it could become: architects predesigning projects, selecting cans to fit the projects, and executing their ideas for awards in competitions around the country—with the biggest winners being 30 million hungry Americans.

She had no doubt that the design community would jump aboard. "These people live to compete," says Melillo, who is now chairperson of CANstruction. "They compete all day in design competitions—to build the museum, to build the new city hall."

Long Island, with more than 7,000 cans, joined this year. Cincinnati was another first-time entry, with 19,000 cans.

In Seattle, organizers turned away firms for want of space. They're looking for a bigger venue for next year. In the meantime, slides of regional winners will go this spring to the AIA/SDA convention in San Francisco, where a national winner will be chosen. *Debra Morgenstern Katz*

DRAMATIC ROTUNDA FORMS 'VILLAGE' CENTER OF AFRICAN AMERICAN MUSEUM

Children smile when they enter Detroit's newest museum. It's not a children's museum, yet it captures their attention. And that's exactly what Sims-Vapner Architects and Associates set out to do when they designed the Museum of African American History—the largest museum of its kind in the world.

The $38 million circular structure opened in April 1997. The 120,000-square-foot building, which is owned by the city, is located in Detroit's cultural center, near the Detroit Science Center and the Detroit Institute of Arts. The construction manager for the project was Jenkins/Turner, a joint venture.

A 400-piece, 100-foot-diameter glass dome is the design's focal point. The dome arches over the lobby and features a traditional African hut and flags of African nations along its base; the lobby floor is embellished with a terrazzo design by artist Hubert Massey. Harold A. Varner, FAIA, says the rotunda is a gathering place that's like the center of an African American village. Coleman A. Young, Detroit's mayor for 20 years, lay in state in the rotunda after his death in November.

Museum President Kimberly Camp said that plans for the new museum began when Young decided five years ago that the museum needed a larger space.

In addition to three exhibition galleries, a theater, and classrooms, the museum houses a research library, a restaurant, and the Coleman A. Young archives. *Susan R. Bleznick*

The glass-domed rotunda of the Museum of African American History, designed by Sims-Vapner Architects.



TRAINING MASTER MASONS **The urgent need for masters of the trowel trades was underscored by the recent renovation of the 100-year-old Thomas Jefferson Building of the Library of Congress in Washington, D.C. Much of the nearly four acres of marble covering walls, piers, staircases, and floors in the 326,000-square-foot Book Palace, as it is known, had deteriorated after a century of use.**

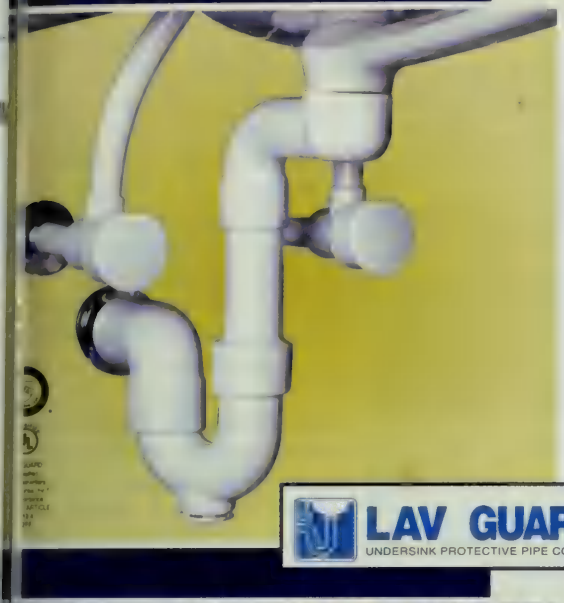
Many of the skilled craftsmen who worked on the nine-year restoration belong to the International Brotherhood of Bricklayers and Allied Craftworkers. The union's International Masonry Institute (IMI) sponsors a national training program for these tradesmen, including a 12-week program in stone and terrazzo work.

The need for training is increasing as big projects like airports and schools use terrazzo and mosaic, said William "Butch" Rovder, the union's stone director. A return to the use of stone and mosaic has revealed a shortage of craftspeople in some parts of the country. But the IMI hopes to rectify the situation. In addition to its 12-week residential program, the institute runs a customized, mobile training center. The IMI also trains younger workers. When students leave the comprehensive program, "the majority can work on a project alongside a master craftsman," says Rovder. ***Sherie Winston***

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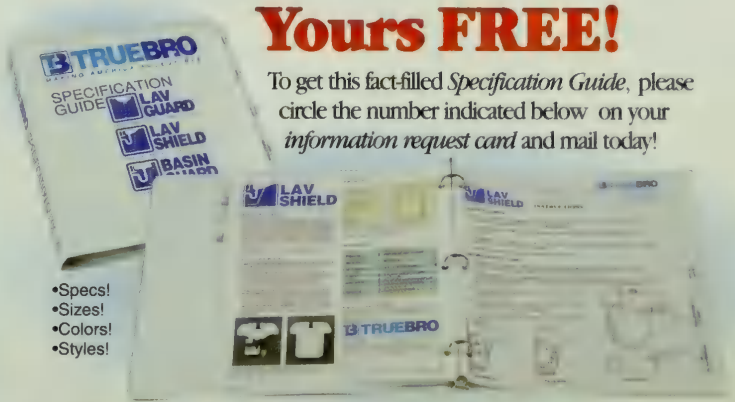
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CIRCLE 18 ON INQUIRY CARD

NEWS BRIEFS

Recent grads face salary gender gap A survey of architecture and interior design students shows a significant gender gap in entry-level pay among those who secured positions upon graduation. In architecture, the starting salary for female graduates was, on average, $1,600 less than the salary of male graduates. Female interior design graduates received about $2,000 less than their male counterparts, despite constituting nearly 90 percent of the graduating class. The survey is part of a larger, ongoing study, conducted by professors Ann Black and Anton Harfmann at the University of Cincinnati, that will follow the career paths of approximately 500 graduates of architecture and interior design programs.

Huge casino opens in Sydney Star City, a 2.1-million-square-foot casino and entertainment complex, opened in November 1997 at the site of a former wharf on Sydney's Darling Harbor. The complex is the Princeton, N.J.–based Hillier Group's largest foray into entertainment architecture to date. Designed with Cox Group, an Australian firm, the $600 million complex "celebrates the diverse Australian landscape" through the use of sandstone and the "fiery oranges, deep blues, and forest greens" of the Great Barrier Reef and the outback, say the architects. It is the largest building to be constructed in Sydney since the Opera House opened in 1973.



Star City, Sydney, by the Hillier Group and Cox Group.

New chairman for National Building Museum Harold L. Adams, FAIA, chairman of the Baltimore-based RTKL Associates, has been named chairman of the National Building Museum in Washington, D.C., the second architect elected to that position since the museum's inception in 1980. Adams insists that the museum is not a museum of architecture but a museum of everything and everyone that contributes to the built environment. A central effort of his three-year term will be to install a permanent exhibit entitled "The Building of America," which will take up the entire second floor. "This story is going to include architecture, of course," he says. "That's the sexy part of the story; lots of people are interested in it."

Latest Bhutanese addition in Texas For the new 130,000-square-foot Undergraduate Learning Center at the University of Texas, El Paso, university president Diana Natalicio demanded that the structure be built in the Bhutanese style. This follows a tradition begun in 1914 when, after reading an article in *National Geographic* magazine, the wife of the then university president realized how similar the foothills of the Himalayas were to the landscape of the UTEP campus in the foothills of the Franklin Mountains. The $14 million building has

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the towers, arched windows, red brick banding, and decorative mandalas common to Bhutanese architecture. Architect David Albidrez says that the massing of Bhutanese architecture proved flexible enough to accommodate both large auditoriums and small classrooms.

No AIA Gold Medal In a recent vote, the AIA's board of directors failed to reach the three-fourths majority necessary to select a winner of this year's Gold Medal, the organization's highest award. This is the 40th time since the medal was first awarded in 1907 that no architect has been selected. Richard Meier, FAIA, received the award last year.

Connecticut firm wins South Korea's grand prize Tai Soo Kim Partners of Hartford, Connecticut, has received the South Korean Grand Prize for architecture for its 800,000-square-foot L. G. Chem Research and Development Park in Daeduk. An elongated, three-story atrium serves as a circulation spine for the $120 million complex, allowing sunlight even into facilities where the most secret research takes place, areas that in most buildings are sunlight-deprived. In the past, the firm primarily designed civic buildings throughout New England, but large-scale corporate projects in South Korea—the native country of its founding partner Tai Soo Kim, FAIA—now account for a majority of business.

L. G. Chem Research and Development Park, Daeduk, South Korea, by Tai Soo Kim Partners.



Insurance rates drop Liability coverage costs for architectural and engineering firms dropped 22 percent over the last two years, according to a recent study by J&H Marsh & McLennan. This is due to higher competition among insurance providers and to fewer losses incurred by firms. Firms with more than 500 employees have benefitted the most, with an average 49 percent drop in rates. Recognizing a good deal, firms have raised their limit of liability coverage by an average of 24 percent.

New Agnes Martin gallery A recently completed 6,000-square-foot addition to the Harwood Museum in Taos, New Mexico, will house seven new works by Minimalist painter Agnes Martin. Kells and Craig Architects of Albuquerque, who designed the $1 million gallery, wrangled with town officials to allow a more contemporary exterior to join the traditional street facade; they eventually had to compromise. The interior space, which includes 2,000 square feet from the original building, presented an even greater challenge, as there was the danger of overwhelming Martin's subtly colored paintings.

Departure of *Architecture* editor Deborah Dietsch, who was editor-in-chief of *Architecture* magazine for eight years, has left the publication. No reason was given for her departure, though publisher Steve Donohue said it was related to moving the magazine from Washington, D.C., where it was founded by the AIA, to New York City to join other publications of its current owner, BPI Communications. Donohue indicated that a search was under way for Dietsch's successor. ■

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CIRCLE 20 ON INQUIRY CARD

Calendar

Architecture-Works by Gordon Matta-Clark
West Hollywood, Calif.
Through January 18
Eight architectural sculptures produced from 1971 to 1977 by Gordon Matta-Clark, the late artist (and architect by training). MAK Center. 213/651-1510.

Charlotte Perriand
New York City
Through January 24
The career of this modernist, who began her career working with Le Corbusier and Pierre Jeanneret on interiors and furniture, is the focus of this retrospective. Furniture, lighting, and photographs are on display. Architectural League, Urban Center. 212/753-1722.

Harry Weese: The First 50 Years
Chicago
Through January 31
A photographic retrospective of the Chicago firm's work. Also on view is "Chicago Union Station: After the Rush," showcasing the 1926 railroad terminal. Chicago Architecture Foundation. 312/922-3432.

Other Soundings: Selected Work by John Hejduk
Montreal
Through February 1
The first retrospective of this major architect and thinker gathers together some 500 examples of his work, including drawings, models, books, and photographs from 1953 to 1997. Canadian Centre for Architecture. 514/939-7000.

The Bronx Community Paper Company
New York City
Through February 8
An exhibition chronicling the design of a state-of-the-art recycling plant and paper mill by architect Maya Lin. Municipal Art Society. 212/935-3960.

Philippe Starck Designs: Reinventing the American Hotel
Philadelphia
Through March 1
A sampling of the French designer's objects and interiors, featuring everything from furniture to utensils. Also on view will be elements from a guest room at New York's Paramount Hotel. Philadelphia Museum of Art. 215/763-8100.

Signs and Wonders: The Lights of Times Square
New York City
Through March 8
Actual signs as well as photographic records are on display in this exhibition tracing the development of technology and imagery in Times Square advertising. New-York Historical Society. 212/873-3400.

Zaha Hadid: Painted Projects
San Francisco
Through March 10
The first solo museum presentation of the work of the Iraqi-born British architect includes two dozen paintings of cities and buildings in assemblages of exploded lines and planes. San Francisco Museum of Modern Art. 415/357-4000.

Robert Adam: From Sketch to the Finished Drawing
New York City
Through April 5
An exhibition of the work of architect Robert Adam (1728–1792), considered the father of the Classical Revival in Britain, includes 65 drawings, models, objects, and books on loan from the Sir John Soane Museum in England. Frick Collection. 212/288-0700.

DX Permanent Collection
Toronto
Through April 19
An exhibition of works in the collection by 20th-century Canadian industrial designers, including Jan Kuypers. Design Exchange. 416/363-6121.

Civics Lessons: Recent New York Public Architecture
Washington, D.C.
Through May 11
Projects in New York City initiated by public agencies working with architects between 1985 and 1995. Organized by the AIA New York Chapter in conjunction with the New York Foundation for Architecture, the show emphasizes the link between public investment in architecture and the economic, social, and aesthetic quality of the city. National Building Museum. 202/272-2448.

Toy Town
Montreal
Through May 31
An exhibition exploring how toys from several cultures have represented the village, town, and city. Twenty-six toy towns from the Canadian Centre for Architecture's collection—ranging from early 19th-century German wooden villages to recent CD-ROMs—are on display. 514/939-7000.

A. G. Rizzoli: Architect of Magnificent Visions
New York City
January 17–March 8
Drawings by the late draftsman, including his vision for a mythical city, YTTE (Yield to Total Elation). Museum of American Folk Art. 212/977-7298.

International Air-Conditioning, Heating, Refrigerating Expo
San Francisco
January 19–21
The annual exposition at the Moscone Center includes 1,000 exhibitors as well as technical sessions and committee meetings. Contact International Exposition Company, 15 Franklin Street, Westport, Conn. 06880; call 203/221-9232; fax 203/221-9260; or E-mail ahrexpo@aol.com.

Temple Bar: Dublin
New York City
January 23–March 11
A number of buildings by young Irish architects, all planned in 1991 by Group 91 for an area of Dublin's medieval city center. Urban Center. 212/935-3960.

Fresh Furniture
Pittsburgh
January 23–April 18
A survey of contemporary furniture designed and crafted in the United States. Society for Contemporary Crafts. 412/261-7003.

Fabrications
New York, San Francisco, and Columbus, Ohio
January 31–April 12
Organized jointly and presented simultaneously at the Museum of Modern Art in New York, the San Francisco Museum of Modern Art, and the Wexner Center for the Arts in Columbus, Ohio, this exhibition features full-scale commissioned projects by such architects and designers as Mockbee/Coker, Eric Owen Moss, Smith-Miller + Hawkinson, and Hodgetts + Fung. 212/708-9756 (MoMA).

Build Safe '98
Rosemont, Ill.
February 17–19
The eighth annual Construction Safety Conference, to be held at the Holiday Inn O'Hare International. Call Gayla Bockrath, conference manager, at 800/552-7744.

Alvar Aalto: Between Humanism and Materialism
New York City
February 19–May 19
The first large-scale retrospective in the United States to present original drawings and models of work by the renowned Finnish architect, designer, and town planner. 212/708-9400.

Breaking Through: The Creative Engineer
Washington, D.C.
February 26–November 8
An exhibition that examines the role and process of creativity in the field of engineering through a series of case studies. National Building Museum. 202/272-3606.

continued on page 44



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CIRCLE 21 ON INQUIRY CARD

continued from page 42

Competitions

Kenneth F. Brown Asia Pacific Design Award
Registration deadline: January 23
The School of Architecture of the University of Hawaii at Manoa, in cooperation with the Architects Regional Council Asia, invites entries in the second Kenneth F. Brown Asia Pacific Culture and Architecture Design Award program. Projects completed between January 1987 and January 1997 in Asia and the Pacific Rim may be entered. Contact Brown Design Award Program, 2410 Campus Road, School of Architecture, UH Manoa, Honolulu, Hawaii 96822; call 808/956-3515; fax 808/956-7778; or E-mail kbda98@hawaii.edu.

Young Architects Forum
Entry deadline: January 27
"Position Paradox" is the theme of the 1997–98 Young Architects Forum, sponsored by the Architectural League of New York. Architects and designers who have been out of undergraduate or graduate school for 10 years or less may enter a portfolio, which may include several projects. Winners will be invited to exhibit their work at the Urban Center and present lectures in the spring. For further information or to receive an entry form, call 212/753-1722.

Infill Housing for Chicago
Registration deadline: January 30; submission deadline: March 27
Women in Planning and Development and Westside Habitat for Humanity invites Infill housing design ideas for four parcels of land in Chicago's West Garfield Park/North Lawndale community. Anyone may enter this one-stage competition. Contact Women in Planning and Development, P.O. Box 61-8061, Chicago, Ill. 60661-8061.

Ceramic Tile
Submission deadline: January 31
The Tile Promotion Board's Spectrum International Ceramic Tile Design Competition honors creative excellence in residential and commercial ceramic tile design. Architects, interior designers, contractors, builders, retailers, manufacturers, distributors, and others who have influenced the specification or installation of ceramic tile may enter projects completed between January 1996 and December 1997. Winners will be announced at the International Tile and Stone Expo's All-Industry Awards in Orlando, Florida, in April. Call the Tile Promotion Board at 800/495-5900 or 561/743-3150; or fax 561/743-3160.

International Arts Fellowship
Application deadline: January 31
The Academy Schloss Solitude offers 6- to 12-month residential fellowships in architecture, design, fine art, video/film/new media, music, literature, and theater. Entrants must be 35 or younger. Information may be requested by postcard from Academy Schloss Solitude, Stiftung des Offentlichen Rechts, Solitude 3, 70197 Stuttgart, Germany.

Vincent Scully Research Grant
Application deadline: February 2
The Architectural History Foundation announces the Vincent Scully Research Grant, a $10,000 biannual award to facilitate the publication of a monograph on American architecture. Preference for the grant will be given to projects that are substantially complete and/or under active consideration for publication. Applications must include a proposal, an outline of how the award will be used, and other materials. Architectural History Foundation, 350 Madison Avenue, New York, N.Y. 10017; fax 516/944-5961.

Boston Society of Architects Awards
Health care submissions deadline: February 2; housing and interiors deadline: March 1
Categories for the Boston Society of Architects' 1998 design awards program are health care, housing (single- and multifamily), and interiors. The first category is open to New England architects and those with projects in the region; the second and third are open to Massachusetts architects and those who have designed projects in the state. The interiors category is also open to interior designers. Call the Boston Society of Architects at 617/951-1433 x221; fax 617/951-0845; or E-mail bsarch@architects.org.

Italian Ceramic Tile
Submission deadline: March 15
Assopiastrelle, the Association of Italian Ceramic Tile and Refractory Manufacturers, announces its 1998 design award. The $5,000 prize recognizes designers or architects who have created innovative settings using Italian ceramic tiles. Projects must be completed by February 28. Write Abbate Communications, 222A Sixth Avenue, 2nd floor, Brooklyn, N.Y. 11215; or call 718/783-3160.

DuPont Benedictus Awards
Submission deadline: March 9
The 1998 DuPont Benedictus Awards for Innovation in Architectural Laminated Glass, sponsored by DuPont and the AIA with the support of the International Union of Architects, recognizes outstanding or *(continued on page 160)*


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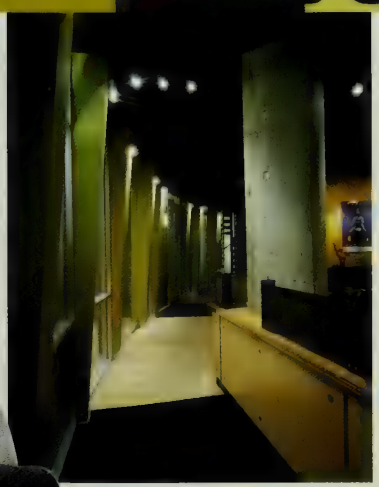
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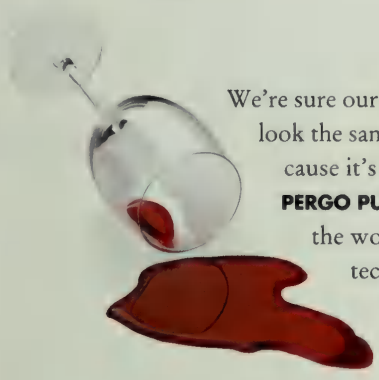
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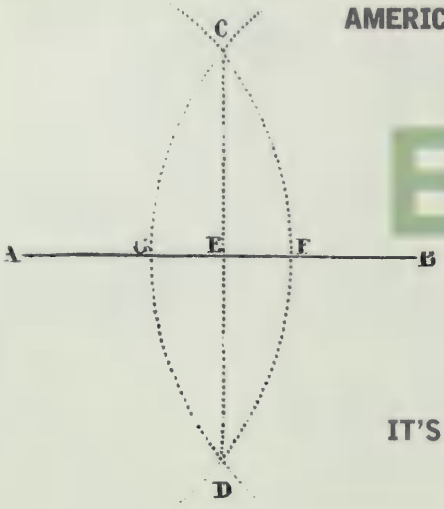
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CIRCLE 25 ON INQUIRY CARD

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AMERICA'S BEST-MANAGED FIRMS

How to succeed with EXPANDED SERVICES

IT'S NOT JUST DESIGN ANYMORE. ARCHITECTS ARE MAKING MONEY BY STAYING INVOLVED DURING THE ENTIRE LIFE OF A BUILDING.

by Clifford A. Pearson

Askew Nixon Ferguson Architects will do almost anything for a good client. Based in Memphis, Tennessee, where Federal Express has its hub, the firm has done all kinds of work for FedEx for 20 years—acting as owner's representative and project manager on some jobs, putting together requests for proposals on others, and working as design architect on still others.

Bottom Duvivier Architects of Redwood City, California, employs a different business strategy—they have identified a service no one else is providing and developed a tool to help deliver it. The service is gathering and analyzing information on how people work in particular office environments, a process the architects call "discovery," which they employ before programming a client's workplace. The tool is a proprietary piece of software called 3T, which creates a database of useful information on a company's employees and the ways in which they get their work done.

From predesign to postoccupancy, architects are expanding the services they offer. According to the 1997 American Institute of Architects Firm Survey, commissioned by the AIA and the McGraw-Hill Companies Construction Information Group, expanded services are generating a large portion of firm growth. In 1996 nearly 40 percent of architects' net billings came from expanded services, up from 22 percent in 1990. In dollar volume, these services jumped 150 percent, compared with an increase of just 11 percent for design services for the period. Why has there been such an explosion in expanded services? "The market is demanding it," says Kermit Baker, chief economist for the AIA. "Clients are looking for someone to provide soup-to-nuts services."

Architects aren't the only ones expanding the kinds of services they provide. Other professionals, including lawyers and accountants, are pursuing the same strategy, reports Robert Gutman, a lecturer in architecture at Princeton University and a consultant to architects. Indeed, some legal firms are doing accounting work, and a few of the big accounting firms are doing strategic business consulting, which often includes facilities planning. The result is a blurring of distinctions between the professions, with architects sometimes finding themselves running up against giant entities such as Anderson Consulting, the management consulting firm.

The motivation for all these professionals to expand their services is twofold, explains Gutman: first, to expand revenues; and second, to "get a better grasp on the problems facing their clients."

"The only way a 25-person firm like us can compete with the big firms is to add value to the process," explains Lisa Bottom, of Bottom Duvivier Architects. The firm's 3T computer program "is a way for us to establish intellectual rigor in the process," she adds.

"What we're seeing is a shift in the role played by some architects, from one that's project-oriented to one that's relationship-oriented," explains Richard Hobbs, FAIA, vice president of professional practice for the AIA. Instead of delivering a project and then moving on, architects are trying to serve clients on a long-term basis, providing a variety of services before architectural design starts and after it is completed.

Rewriting the rules

To reflect this changing role, the AIA has rewritten one of its most basic contract documents—the Owner/Architect Agreement (B141). The new document organizes services into six categories—project administration, planning and evaluation, design, construction procurement, contract administration, and facility operation—no longer making a distinction between "basic" and "additional" services. The implication is that architects can perform all kinds of work during the life cycle of a building, depending on the needs of the client.

CLIENTS ARE LOOKING FOR SOMEONE TO PROVIDE SOUP-TO-NUTS SERVICES.

"What you want to provide is a *program* for a client, not just a project," says Paul Nakazawa, an architect whose firm, Pearson Egan Nakazawa, works as a management consultant to design firms. "This way you get a continuous stream of work." Being involved with a client on an ongoing basis and getting to know its business allows the architect to become a trusted advisor, not just a service provider, explains Nakazawa. Trusted advisors have the inside track on getting future projects, and they don't have to compete on the basis of fee alone.

Lewis Goetz, AIA, whose firm, Greenwell Goetz Architects, in Washington, D.C., specializes in corporate interiors, explains his mission this way: "Our job is to understand all of the issues [facing a client] and come up with a process and a plan to solve them." For large corporate clients, the issues often include human resources, technology, and coping with change, in addition to design considerations. "The key is convincing the client to let us put together the package" of services and

consultants, rather than having the client or another consultant do it, says Goetz.

A few years ago, Greenwell Goetz helped "reengineer" Mobil Oil's headquarters in Fairfax, Virginia. "We offered Mobil a team approach, including programming, technology advocacy, change management, project management, and design," relates Goetz. "Technology advocacy," explains the architect, is "finding better applications of technology to help people do their work. You're not changing the process, but improving the tools." Although Mobil had renovated their headquarters not long before Greenwell Goetz reengineered it, the company understood that changing approaches to work and new business tools required a new kind of workplace.

"The new paradigm is for architects to serve clients as facilitators and integrators," says Hobbs. While architects don't have the expertise to provide all services, their training and overview of the building process allows them to organize and direct the entire building team. Ironically, by expanding beyond "traditional" services, architects are starting to regain control of the building process, which they lost during the past few decades as engineers, project managers, and contractors sliced larger pieces of the pie for themselves.



Changing needs of clients

In the wake of the recession that followed the 1987 stock market crash, corporate America underwent a series of dramatic changes as companies laid off employees and contracted for services that had been provided in-house. In the past, corporate facilities departments oversaw the building needs of big companies. Today, many corporations have eliminated these departments or shrunk them significantly. Even as business picked up in the 1990s, many corporations kept their payrolls lean. This situation has created a host of opportunities for architects.

"Clients are looking for someone to provide one-point responsibility" for the work formerly done by in-house departments, says Stuart Rose, whose firm, Professional Development Resources, advises design firms. "They want to find a few good vendors or consultants with whom they have built trust," reports Rose. "The way the market is working these days, you'll get either all of a client's work or none of it."

The way to earn trust is to show you understand your clients' businesses as well as they do. That often means focusing on particular kinds of clients. "Narrow your client types and provide more services," recommends Mark Zweig, president of Zweig White Associates, a Natick, Massachusetts, consulting firm. "Architects tend to do just the opposite," looking far and wide for clients to whom they can sell the same services.

Working from a focused base of clients, Askew Nixon Ferguson Architects (ANFA) offers a broad range of services, going as far as spinning off a couple of companies to offer construction management and facilities management. Set up as separate corporations, these two entities can work on projects for which ANFA is not the architect as well as those for which it is.

The most important lesson ANFA has learned about providing expanded services, says Stephen Hill, AIA, a principal at the firm, is "Always ask your clients if they want fries." Just as McDonald's management knows it can increase sales at virtually no expense by training its clerks to ask the right questions, ANFA makes sure its clients know about all of the services it provides in addition to architectural design.

"The cost of selling more services to an existing client is about one-seventh that of selling your firm to a new client," states Rose. "And if you start doing that, you find that your whole marketing focus is different. Instead of sending out brochures and looking for new clients, you're aiming for a 95 percent repeat-business rate."

Organizational issues

Like ANFA, some firms have set up independent groups to provide services other than architectural design. For construction management or design-build operations, liability may be an issue, so having independent companies may make sense. Separate organizations may also encourage the entrepreneurial spirit to flourish and allow employees and shareholders to be rewarded according to the success of their efforts.

Separating expanded services from architecture can sometimes give a firm more credibility with clients. Smith Group, a Detroit-based company that includes architectural firms in three cities, an engineering firm, and separate groups for real estate strategy, development, and program management, doesn't use the word "architecture" or "architects" in the names of any of its firms. Instead it uses the phrase "Solutions for the natural and built environment" to identify what it does, explains Arnold Mikon, FAIA, chairman, president, and CEO of Smith Group.

"We've found that generally speaking if we present ourselves as an A/E with expanded services, all the client hears is 'A/E' and we're

From its beginnings in 1962, Cambridge Seven Associates (C7A) has gone beyond the traditional boundaries of architecture. Founded by a group of urban planners, architects, exhibit designers, and graphic designers, the 65-person, Cambridge, Massachusetts, firm has continued to integrate multiple fields of design.

But over the last two decades, the firm has involved itself in an increasingly broad portion of the building process—including market analyses, construction management, and even at-risk development. The firm has enough confidence to take equity positions in some of its projects, in part because it has developed expertise in a particular building type (aquariums) and because it knows its home market (Boston) so well.

Aquariums are an unusual building type. Because municipal or regional organizations often propose building an aquarium before a team of experts is in place, C7A has assisted clients in determining the scope, testing the feasibility, programming, developing the content, and marketing of every aquarium project that it has undertaken in the past 25 years, states Peter Kuttner, one of the firm's partners.

Having provided such services for many years, C7A decided to differentiate them from its work as architects and designers and set up a separate company, International Design for the Environment Associates (IDEA), in 1990. While the original shareholders of IDEA were all C7A partners, the company now has some shareholders outside of C7A and a chief operating officer, Frederick Wales, who has a background in construction and was once a submarine officer.

C7A's entrepreneurial streak began in the mid-1970s when Prudential Insurance hired it to design a multimedia show called "Where's Boston?" and made C7A partner Peter Chermayeff the executive producer. After two years, the show's stage was damaged during a hurricane. When Prudential didn't rebuild it, C7A bought the rights to the show, reassembled it on a different site, and ran it as a money-making enterprise for 13 years. "Being in show business gave us an idea of what we could do beyond architecture," notes Chermayeff.

In the early 1980s, the firm acted as codeveloper of a $65-million mixed-use project it designed in Cambridge—a hotel, housing, and retail complex called Charles Square. Later, C7A sold its interest in the project for a profit. "This gave us a taste for real estate," says Chermayeff.

When the city of Lisbon approached C7A about working on an aquarium for its 1998 expo, the firm decided that the tight deadlines and international setting made it too difficult to work in a traditional capacity as architect. So it proposed a turnkey development in which IDEA (in joint venture with a Portuguese contractor) would guarantee a maximum cost and control almost all aspects of the aquarium's design, construction, and start-up operations.

As for future entrepreneurial ventures, "We're looking to do something with museum-shop retailing or educational retailing," states Chermayeff. "It would be an extension of what we do with exhibit design and might be another spin-off company."

Taking financial risks, admits Chermayeff, "can be dangerous" and "isn't everyone's cup of tea." He adds, "I'm not sure how many architects have the stomach for this type of work. But I thrive on it." ■



Flanking principal Peter Kuttner are designers Meena Hewett and Marc Rogers. International Design for the Environment Associates' offices are in a separate building close to Cambridge Seven Associates.

dismissed from consideration for these [other] services," says Mikon. By dropping the words "architecture" and "engineering" and emphasizing the broad scope of expertise they provide, the company is more successful, says Mikon.

Some consultants warn that separating expanded services too much may minimize their beneficial impact on the rest of the firm. "There are some good reasons to run them as entrepreneurial operations, but there is the danger they will always exist as ancillary functions to the rest of the firm," explains Louis Marines, president of the Advanced Management Institute in San Francisco.

"One of the key unanswered questions in our profession today is, How should I organize my firm?" says Marines. "Should it be by building type, geography, function, or service? Expanded services make this issue even more complex." Most experts agree, though, that there is no one correct answer. The right organization depends on the needs of the clients and the capabilities of the architectural firm.

Fitting expanded services into a firm

Another key question is whether to bring expanded-service capabilities in-house or develop a network of consultants with whom you work on a regular basis. "Owning" these capabilities may give the firm a stronger presence in the field but may burden it with extra overhead and make it less able to adapt to changing market conditions.

"Our basic approach is to focus on our core competencies, then bring in outside consultants who are the best in their business," states Lewis Goetz. "After all, why would a really great engineer want to work for an architectural firm? Great engineers want to work for engineering firms." Goetz tries to work with the same consultants on a regular basis, but he has no contractual arrangements with any of them.

Some firms are experimenting with more formal alliances, not only with consultants but with other architects. The Star Alliance, which includes architects, engineers, planners, and consultants from 14 companies in North America, is perhaps the most ambitious of these under-

akings. Started five years ago by Marines as a way for a group of large and nedium-size firms to share expertise and to network, it is now starting to unction as a megafirm in its own right and has hired its first CEO.

"Star is an experiment," says Gray Plosser, president of KPS Group, a member firm, located in Birmingham, Alabama. "It's a way of llying design organizations to let them grow, expand, and provide stronger financial results than they could on their own," explains Plosser. Asked if Star has made a positive impact on his firm's bottom line after ive years, Plosser says, "I think it'll take two more years for us to see if Star s as valuable as we hope it will be."

A different kind of partnering is being explored by Callison Architecture, a large Seattle-based firm, which is marketing its corporate consulting services by developing a demonstration workplace in conunction with AT&T Wireless Services, Barclay Dean Interiors, Steelcase, and other companies. To show how it can redesign corporate offices, Callison and its collaborators took 5,000 square feet in a Seattle office building and built a workplace called Future@Work where potential clients can walk through a series of innovative interiors.

Services that run the gamut

Recognizing that architectural design represents only a small part of a building's life cycle, firms are getting involved both earlier and later in the process. By and large, though, architects are a lot more active in the planning and predesign stages than in construction and postconstruction. According to the 1997 AIA Firm Survey, 15 percent of responding firms' net billings derived from planning and predesign services, while only 2.3 percent came from construction services and 3.9 percent from postconstruction. Interior design accounted for 18 percent of firms' net billings.

Predesign services have the advantage of involving the architect early in the process and increasing the firm's chances of getting more work later on, explains Zweig. "But back-end services help maintain relationships with clients," he adds.

J. Robert Hillier, FAIA, chairman of the Hillier Group, explains it this way: "Such services as strategic facilities planning have given us the opportunity to get on board for projects before they were fully scoped out as projects." But Hillier's firm provides a full range of expanded services, including site-feasibility studies, programming, real estate pro forma analysis, construction management, and design-build. "Many of the expanded services have a very high value-added aspect for the clients," reports Hillier, "enabling them to become higher-fee services with much less liability and none of the vicissitudes of the project being delivered by a third party, such as a general contractor."

Machado and Silvetti Associates in Boston also tries to participate in the early stages of a project. "Our most successful projects—from our own viewpoint as well as our clients'—result from a process in which we help clients define the problem of a project and not just provide them with a solution," explains Timothy Love, one of the firm's vice presidents. For example, the 38-person firm has had a relationship with Princeton University since 1987 that has involved developing a database of the existing campus buildings, master planning, advising on future development, and designing projects such as a parking structure and a dormitory. "Due to our long relationship with Princeton, we share responsibility with the client for the stewardship of the campus," says Love.

Machado and Silvetti is also renovating the J. Paul Getty Villa in Malibu, California, transforming it from a general museum of art into a specialized museum for antiquities, now that the new Getty Center has opened in Los Angeles. "For the Getty Villa project we recommended that the programming effort and the preliminary design phase be done simultaneously," explains Love. This allowed the two processes to inform one another and helped the client "clarify [its] own institutional mission."

Construction and postconstruction services take architects farther afield from the old-time definition of what an architect does. But they may represent a greater opportunity. "If one looks at the life of a building, from gestation through birthing to adolescence and adulthood to obsolescence and reuse, it is clear that more of the spectrum is post-rather than predesign," explains KPS's Plosser. "I think we make a significant mistake in centering the discussion on building (the verb) rather than buildings (the noun)."

In 1996 O'Donnell Wicklund Pigozzi and Peterson Architects (OWP&P), a 239-person firm in Chicago, began offering facilities consulting. Although integrated with the rest of the firm, facilities consulting at OWP&P has its own leadership and offers services unique to its division, including database creation and management and provision of on-site personnel to manage a building's operation. When OWP&P kicked off the service, "we had the problem upside-down," admits

EXAMPLES OF EXPANDED SERVICES

1. Facilities information management: design, installation, and maintenance of a CAD database that records, tracks, and monitors the human and physical resources in a client's portfolio of facilities. (KPS Group)
2. Thematic development for hotels, restaurants, and casinos. (The Hillier Group)
3. Turnkey development of aquariums, starting with feasibility analysis and including everything from architectural and exhibit design to collection of animals, training of staff, and start-up operations. (Cambridge Seven Associates through sister company IDEA)
4. Retail prototype design and rollout. (Callison Architecture)
5. ADA services: accessibility audits, surveys, reservation



dation reports, and client training in complying with the Americans with Disabilities Act. (HOK)

6. Designing and installing 3D interactive architectural environments. (Asymptote Architecture)
7. Marketing and promotional services: preparing models, signage, and presentation materials for clients to use at special events. (GGLO)

"WHAT YOU WANT TO PROVIDE IS A PROGRAM FOR A CLIENT, NOT JUST A PROJECT," SAYS CONSULTANT PAUL NAKAZAWA.

Pat Rosenzweig, a spokesperson for the firm, "focusing on software rather than on client need." Eventually, OWP&P hired an experienced leader in the field to offer clients a full range of facility management services.

Doing it all: from feasibility study to fish handling

When the Genoa Aquarium opened in 1992 as part of Italy's 500th anniversary celebration of Columbus's landing in America, it featured a building designed by Cambridge Seven Associates. No surprise there: Cambridge Seven has designed aquariums around the world over the last three decades—from Boston and Chattanooga to Osaka, Japan. But the firm's involvement in the Genoa project didn't start or stop with architectural design. A company set up by Cambridge Seven, called International Design for the Environment Associates (IDEA), provided an array of services including market feasibility, business-plan development, programming, construction, exhibit design and installation, even animal collection and introduction of animals into their exhibits.

And that's not all. IDEA helped set up the Italian organization that would operate the aquarium, recruiting and training a team of administrators, plant operators, animal-care specialists, and promotion and marketing executives. So Cambridge Seven and its subsidiary essentially designed the client, as well as the aquarium building.

Small firms are also finding opportunities in expanded services, often in specialized niches. For example, Asymptote Architecture, a New York City firm headed by Hani Rashid and Lise-Anne Couture and staffed with a handful of young, computer-savvy architects, has been successful with computer-related services. For a large financial institution in New York, the firm is developing "a real-time information environment" that will include an interactive 3D model of the institution's famous building. The client had originally hired a computer firm for the project, says Rashid, but wasn't happy with the result. Only after seeing what Asymptote could do did the client realize that an architect brings together the computer and spatial skills necessary for the project.

"THE WAY THE MARKET IS WORKING THESE DAYS, YOU'LL GET EITHER ALL OF A CLIENT'S WORK OR NONE OF IT," STATES MARK ZWEIG.

Challenges to expanding services

With new services come a host of new challenges and issues for architects to address. The first is figuring out which additional services to provide. "Listen to your clients," advises almost every consultant. If your existing clients need certain kinds of work, you should help them get it—either by providing it yourself or bringing in consultants.

But timing is an important issue as well. "Entering the market at the right time is imperative," states Larry Self, executive vice president of Hellmuth Obata + Kassabaum. "Being too early can be as detrimental as being too late." And what works one day may not work as well the next, something ANFA discovered with its computer-aided facility management (CAFM) services. "Six years ago we went into CAFM as we found many of our clients needing these services," recalls ANFA's Hill. For three years, the firm made healthy profits from facility management. But the market changed, competition increased, and the firm's success with these services has diminished, admits Hill.

Not only does the market have to be ready, but the firm must be prepared as well for its dive into new territory. "I've seen some small firms bomb out by expanding into services they weren't yet capable of providing," says Princeton's Gutman. "A firm must be prepared technically and have the human capital as well," advises Paul Nakazawa.

Another danger is spreading yourself too thin. Providing new services "may divert a firm from its essential purpose," warns Peter Piven, a principal consultant at the Coxe Group. "We counsel firms not to go too heavily into new businesses all at once," he says. If a firm provides many services distinct from design, does it endanger its identity as an architecture firm? Few of the consultants and architects interviewed for this article saw this as a serious problem. "It's possible for a firm to travel too far afield and lose its identity," says Gutman. "But I don't see it happening much."

Success comes with a few dangers. One problem in providing expanded services "is the heavy dependence on highly skilled individuals without much second-tier backup," states Hillier. "This creates a workload-leveling dilemma, not to mention the 'held hostage' aspect of having a very specialized service be dependent on a very specialized individual who could get a better salary offer tomorrow."

The architects who are providing expanded services know it isn't easy to do it well. Getting the right people and keeping them, figuring out which skills need to be brought in-house and which can be outsourced, establishing the best mix of services, and learning how to market them are all issues that must be addressed.

Ultimately, expanded services raise the question of value. Is a

KEY LESSONS



1. Celebrate the individuals and their special skills that enable you to provide expanded services well. (The Hillier Group)
2. "Always ask your clients if they want fries." Treat it, let them know about all the services you provide. (Andrew Nixon Ferguson Architects)
3. Strive to make clients understand the value of each service to their business. This will help develop long-term relationships. (HDR)
4. Whatever service you add to your practice must be specific to a particular market niche. Prospects must be highly targeted with a clear message. (Simon Group, Inc.)
5. Don't wait. (RFS Group)
6. Take your architect hat off and learn to listen to people. (Sherman Cramer & Halls)
7. Leadership is critical. Additional services must be led by an expert. (O'Donnell Wicklund Pigozzi and Peterson Architects)
8. Provide an aggressive professional development program for employees to expose them to a variety of disciplines. (GGLO)
9. Expanded services should be the outgrowth of close collaborations with your clients. (Mackinlay and Silverii Associates)



Raphael Arsenian, Maria Casey, Donald Simpson, Steve Hefta, and Gray Plosser in the Birmingham, Alabama, offices of KPS Group.

"A few years ago, we realized, whether we liked it or not, that we were in the information business," says Gray Plosser, president of KPS Group, a 70-person architecture firm based in Birmingham, Alabama. "Architects tend to see information as something they use but always throw away," he says. "But the information itself has great value."

Managing information has been the key to KPS's approach to growth. The firm offers a range of services from strategic facility planning and programming to program management and relocation assistance. But designing and then maintaining the information systems used to manage buildings and building portfolios is the most important element in the firm's package of expanded services.

One of KPS's biggest clients is BellSouth, which owns about 50 million square feet in more than 9,000 buildings. KPS designed and installed a sophisticated CAD database that allows the client to record, track, and monitor this huge inventory of buildings. The system is "an intelligent graphic database" that covers not just the spaces in the facilities but the people who work in them, explains Plosser.

KPS also trains BellSouth employees to use the system and ran a help desk at the start of the project. Although KPS provides software and operational systems, the critical element it provides, says Plosser, is ongoing consulting services. "What we really sell is intelligence"—expert advice.

Another important client is Compass Bank, which is based in Alabama and has operations in Florida and Texas. KPS works with Compass on its capital facilities strategy, helping with budgeting, site selection, architectural design, interior-space planning, and even the installation of furniture and office equipment.

Being involved with these companies during the full life of their buildings means KPS is connected with its clients on a continual basis. "Once you're inside a client's business all the time, you're a more valued part of their operations—and you're much less expendable," says Plosser. "Our desire is to stay connected with the client and the client's real estate assets."

Continual access to a client means knowing about projects before anyone else and getting the jump on the competition. And being involved with buildings during their entire life cycle, not just during the relatively brief period of design and construction, means a steady and predictable source of revenue. "It reduces the peaks and valleys of the business cycle," reports Plosser. "Building goes in cycles, but management and maintenance go on all the time."

Five years ago, most of KPS's expanded services were interior design projects, which represented about 10 percent of the firm's billings. Today, new services such as facility-information and program management account for about 35 percent of KPS's billings—with an additional 15 percent represented by interiors work. "Expanded services are where our most explosive growth is," states Plosser.

Recently, KPS set up a subsidiary company so it can offer design-build services, and has bids out on two such projects. "That's the next horizon for us," says Plosser. ■

service valuable enough to clients for an architect to provide it? If so, how should the firm bill for it? While architects would like to bill based on the value that the service brings to the client—rather than on an hourly or fixed fee—everyone understands this is easier said than done.

Even evaluating a firm's success with expanded services can be difficult. Some up-front work may not add much directly to earnings but might bring in lucrative jobs later on. So instead of seeing each service as a profit center, it may make more sense to look at a firm's overall percentage of repeat business. Firms that are successful in broadening their scope of work achieve repeat-business rates of 80 percent and higher.

What's clear is that the amount of work architects are doing beyond design has grown considerably this decade and should continue to grow as the role of the architect changes. Boutique and star firms may be able to thrive on their reputations for design only, but most other firms will find that competitive pressures are pushing them into offering a broader scope of services. ■

Firms Surveyed

Asymptote Architecture, *New York City, 5–9 employees*
Askew Nixon Ferguson Architects, *Memphis, 30 employees*
BOORA Architects, *Portland, Oreg., 80 employees*
Bottom Duvivier Architects, *Redwood City, Calif., 25 employees*
Callison Architecture, *Seattle, 361 employees*
Cambridge Seven Associates, *Cambridge, Mass., 65 employees*
DES Architects + Engineers, *Redwood City, Calif., 125 employees*
GGLO Architecture/Interior Design, *Seattle, 75 employees*
Greenwell Goetz Architects, *Washington, D.C., 52 employees*
Hellmuth Obata + Kassabaum, *St. Louis, 1,884 employees*
The Hillier Group, *Princeton, N.J., 394 employees*
KPS Group, *Birmingham, Ala., 70 employees*
Machado and Silvetti Associates, *Boston, 38 employees*
O'Donnell Wicklund Pigozzi and Peterson, *Chicago, 239 employees*
Sherman Greiner & Halle, *Concord, N.H., 7 employees*
Smith Group, *Detroit, 651 employees*

Construction Aims at a STEADY PACE FOR '98

THE ECONOMIC FORECAST PROMISES SUSTAINED GROWTH, BUT AT A SLOWER RATE. OFFICES AND SCHOOLS LEAD THE PACK.

Adapted from the F. W. Dodge Construction Outlook '98

In the extended, well-paced recovery of the 1990s, the construction industry has reached cruising speed. So while the rate of growth for new construction starts eased up in 1997, at an estimated 2% from 1996's 8%, the overall level of activity remains healthy. Loss of momentum in a few project types has been more than made up by others in the "balancing act" pattern of recent years. For instance, construction of single-family housing relaxed its vibrant pace of 1996, but highways, hotels, and even office buildings picked up the slack with renewed vigor. Not surprisingly, the solid performance of the economy during 1997 helped keep public works and nonresidential buildings on an upward track.

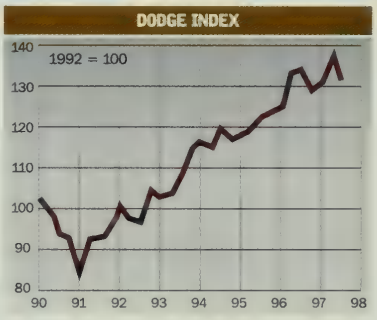
After growing at a brisk 3.8% rate for all of 1997, the economy is projected to settle back to a more sustainable 2.3% during 1998. At the same time, supportive demographics and available funding should continue to benefit the construction industry, alleviating the negative impact of a slower business environment and allowing for a 3% advance in construction contracting. Here are the main points for the coming year's construction market:

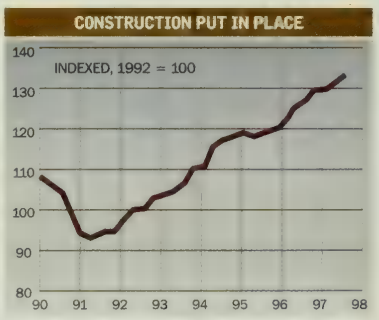
Single-family housing units will post a 2% decline in 1998 as lower overall economic growth dampens housing demand. Dollar volume for this sector will still be up 1%, reflecting a moderate increase in construction prices and a greater share of activity in the West and Northeast, relatively high-cost regions.

Public works construction will climb 3%, supported by funding levels approved by Congress for fiscal 1998 and the continued healthy fiscal condition of state and local governments.

Income properties will advance 6%—the same increase as in 1997—led once again by double-digit growth for offices. Multifamily housing will continue to strengthen, albeit from a depressed level, but the hotel category appears to have peaked after several years of robust activity. Construction of both stores and warehouses is projected to be flat in 1998.

Construction of manufacturing buildings will climb 6% as manufacturers increase capacity in response to 1997's strong economy. Institutional building will advance 5% because of an acceleration in new school construction. Religious and amusement-related construction (such as theaters and sports arenas) will stay steady at a high level. The clinic component of health care facilities will pull back from its recent surge, and the hospital segment is expected to stabilize at a low level after five years of decline.





Economic environment

The construction industry proceeded through 1997 at a healthy clip. The Dodge Index of construction contract value edged up slightly at the start of 1997, surged ahead during the second quarter, and then settled back again during the summer months. These ups and downs averaged out to a generally upward trend, and total construction activity for 1997 rose 2%. While less robust than the 8% reported for 1996, this rise still represents the sixth consecutive year of expansion for the construction industry.

By category, the stars of 1997 were highways and bridges, supported by hotels, offices, manufacturing plants, theaters and sports arenas, health clinics, and religious construction. On the downside, store construction experienced a predicted decline, but the soft activity for warehouses was not anticipated. School construction in early 1997 remained at last year's flat pace but has since shown improved levels of contracting in response to rising enrollments.

By region, the Northeast has finally joined the recovery process after years of lagging behind the rest of the country. From January to September 1997 the Northeast's volume climbed 9%, supported by long-delayed improvement in its housing market and a surge in public works activity (mostly related to Boston's Central Artery project). The South Atlantic economy has also advanced, although at a more modest 4%, thanks to the ongoing strength of its housing market and a brisk rate of commercial activity. The West experienced a sluggish first half of the

1998 NATIONAL ESTIMATES: DODGE CONSTRUCTION POTENTIALS

		1996 ACTUAL	1997 PRELIMINARY	1998 FORECAST	% CHANGE 1998/97
NONRESIDENTIAL BUILDINGS					
FLOOR AREA (MILLIONS OF SQUARE FEET)	OFFICE BUILDINGS	138	155	177	+14
	STORES & SHOPPING CENTERS	235	223	217	-3
	OTHER COMMERCIAL BUILDINGS	344	351	341	-3
	MANUFACTURING BUILDINGS	153	163	168	+3
	TOTAL COMMERCIAL & MANUFACTURING	**870**	**892**	**903**	**+1**
	EDUCATIONAL BUILDINGS	166	170	181	+6
	HEALTH CARE FACILITIES	76	76	74	-3
	OTHER NONRESIDENTIAL BUILDINGS	175	189	192	+2
	TOTAL INSTITUTIONAL & OTHER	**417**	**435**	**447**	**+3**
	TOTAL NONRESIDENTIAL	**1,287**	**1,327**	**1,350**	**+2**
CONTRACT VALUE (MILLIONS OF DOLLARS)	OFFICE BUILDINGS	$17,063	$ 18,725	$21,500	+15
	STORES & SHOPPING CENTERS	16,027	15,475	15,525	–
	OTHER COMMERCIAL BUILDINGS	18,369	19,500	19,725	+1
	MANUFACTURING BUILDINGS	12,963	12,700	13,500	+6
	TOTAL COMMERCIAL & MANUFACTURING	**64,422**	**66,400**	**70,250**	**+6**
	EDUCATIONAL BUILDINGS	21,281	23,175	24,825	+7
	HEALTH CARE FACILITIES	10,899	10,600	10,700	+1
	OTHER NONRESIDENTIAL BUILDINGS	22,834	23,775	25,100	+6
	TOTAL INSTITUTIONAL & OTHER	**55,014**	**57,550**	**60,625**	**+5**
	TOTAL NONRESIDENTIAL	**119,436**	**123,950**	**130,875**	**+6**
RESIDENTIAL BUILDINGS					
DWELLING UNITS (THOUSANDS OF UNITS)*	SINGLE-FAMILY HOUSING	1,073	1,035	1,015	-2
	MULTIFAMILY HOUSING	723	295	305	+3
	TOTAL RESIDENTIAL	**1,346**	**1,330**	**1,320**	**-1**
FLOOR AREA (MILLIONS OF SQUARE FEET)	SINGLE-FAMILY HOUSING	2,171	2,106	2,070	-2
	MULTIFAMILY HOUSING	304	332	345	+4
	TOTAL RESIDENTIAL	**2,475**	**2,438**	**2,415**	**-1**
CONTRACT VALUE (MILLIONS OF DOLLARS)	SINGLE-FAMILY HOUSING	$128,675	$126,225	$127,750	+1
	MULTIFAMILY HOUSING	17,607	19,775	21,225	+7
	TOTAL RESIDENTIAL	**146,282**	**146,000**	**148,975**	**+2**
NONBUILDING CONSTRUCTION					
CONTRACT VALUE (MILLIONS OF DOLLARS)	HIGHWAYS AND BRIDGES	$30,767	$33,600	$34,125	+2
	SEWERS AND WATER SUPPLY	15,176	15,000	15,750	+5
	OTHER PUBLIC WORKS	16,432	16,950	17,425	+3
	TOTAL PUBLIC WORKS	**62,375**	**65,550**	**67,300**	**+3**
	UTILITIES	2,413	2,250	2,350	+4
	TOTAL NONBUILDING CONSTRUCTION	**64,788**	**67,800**	**69,650**	**+3**
ALL CONSTRUCTION					
CONTRACT VALUE (MILLIONS OF DOLLARS)	**TOTAL CONSTRUCTION**	**$330,506**	**$337,750**	**$349,500**	**+3**
	DODGE INDEX (1992 = 100)	**131**	**134**	**139**	

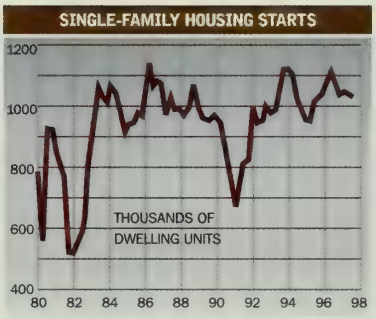
* F.W. DODGE BASIS

year, but has since regained momentum, posting a 2% rise at 1997's three-quarter mark. Both the South Central and Midwest regions have decelerated slightly since 1996, with respective declines of 1% and 2%, as their housing sectors have dropped to what looks like a more sustainable pace.

While general economic conditions are expected to become more sluggish over the next few quarters, the availability of funding should remain high, providing important support for the construction industry. Banks continue to increase their volume of lending—commercial and industrial loans showed a 10% increase in the first nine months of 1997 over the year earlier. Even if the rate of loan growth slows down in 1998, it is still a high level of lending.

For commercial real estate, the past two years have seen a surge of liquidity, helped by the rapid expansion of real estate investment trusts and commercial mortgage-backed securities. For the institutional and public works markets, the municipal bond rate remains at a manageable level—after creeping up to 5.9% last April, the municipal bond rate has since slid back to 5.4%.

Single-family housing



Through much of the 1990s, construction of single-family homes has proceeded at a healthy pace. Steady expansion was reported for the 1992–94 period, followed by a mild correction in 1995, which coincided with that year's sluggish business conditions. Activity bounced back strongly in 1996, rising 9% to 1.07 million units, supported by both a resurgent economy and deferred housing demand from the previous year. While the 1996 housing pattern did reveal some loss of momentum as the year came to a close, a modest rebound then took place at the beginning of 1997, setting the stage for yet another good year for home building.

A less robust economic environment is expected for 1998. With some erosion in consumer confidence taking place as job growth slows, potential home buyers will become more cautious, causing home buying to ease up from the robust pace of 1997. Any sign of a pickup in inflationary pressures may also cause mortgage rates to edge upward, although a move much beyond the 8% mark is unlikely. On balance, fixed mortgage rates are expected to average close to the 7.6% reported for all of 1997. Construction of single-family homes will decline 2% to 1.02 million units for 1998 as a whole.

- **Single-family housing in 1998 will retreat a modest 2% to 1,000 million units.**
- **While the cost of financing may edge up from current levels, fixed mortgage rates are expected to stay within the fairly narrow band of 7% to 8.5%. Other economic variables, such as employment growth and consumer confidence, will be the important determinants of housing activity.**
- **The regional latecomers to this decade's housing recovery, the Northeast and the West, should see continued improvement in 1998, at least partially offsetting a mild slowdown in other parts of the country.**

Income properties

With economic growth up in 1997, activity for income properties—commercial buildings and multifamily housing—has picked up as well. Contracting was projected to rise 4% in 1997 to 1,060 million square feet, marking the fifth straight year of growth, and the sequential recovery of the various structure types has given this sector greater staying power. Stores and shopping centers were the first to experience recovery, in 1993, followed by warehouses over the next two years, with a limited push also coming from multifamily housing. Since 1994, hotel construction has been the strongest growth market, but it may have reached its peak. Now it's the turn for offices to show healthy expansion, and 1997's office improvement is expected to carry over into 1998.

- **The income property group in 1998 will climb 2% in 1998 to 1,080 million square feet, following the 4% increase estimated for 1997.**
- **Office construction will lead the way in 1998 with a 14% rise, helped by lower vacancy rates and rising rents in many metropolitan areas around the country.**
- **Multifamily housing will contribute with a modest gain, but hotels will ease back from a robust 1997, and stores and warehouses will continue to show a gradual loss of momentum.**

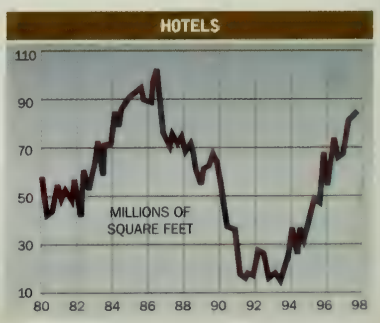
The mid-1990s have also seen the increased use of such financial instruments as real estate investment trusts (REITS) and commercial mortgage-backed securities (CMBS). By tapping public markets, these instruments have increased the investment funds directed at real estate.

In 1998 an economy growing in the range of 2% to 2.5% will not seriously impact the amount of funding directed at real estate. Overall, income-property square footage is projected to rise 2% to 1,080 million square feet, as continued improvement for offices compensates for mild slippage by stores, warehouses, and hotels. The activity in 1998 will be the highest level of income property square footage this decade, yet it will still be about 40% below the peak of the mid-1980s.

Stores. Store construction has experienced the most typical cyclical pattern of the income-property categories, reaching a near record peak in 1995 at 263 million square feet. The expansion efforts of the large discount retailers and specialty superstores were responsible for most of 1995's strength, in combination with the lagging benefit derived from the strong housing market of 1992–94.

The 1997 retreat for stores has turned out to be gentler than the prior year, for several reasons: Single-family housing was particularly strong in 1996, and housing typically leads the pattern for retail construction. In addition, 1997 saw the start of several large mall projects.

Warehouses. The retreat for stores has had a negative impact on warehouses. Contracting weakened during the first half of 1997, and as a result the year saw warehouses drop 8% to 175 million square feet. In 1998 a slower economy and reduced store construction will lead to a further decline for warehouses, as activity falls 3% to 170 million square feet.



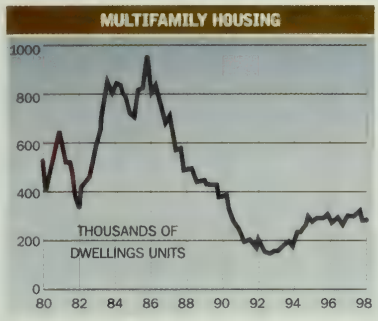
Hotels. Hotel construction continues to proceed at a brisk pace. In 1996,

activity jumped 29% to 64 million square feet, and the healthy performance in 1997 made for another gain of approximately 20%, to 77 million square feet, which would be the highest annual total since 1986. The extended-stay and economy segments of the lodging industry are driving this surge; there has yet to be much construction of full-service hotels.

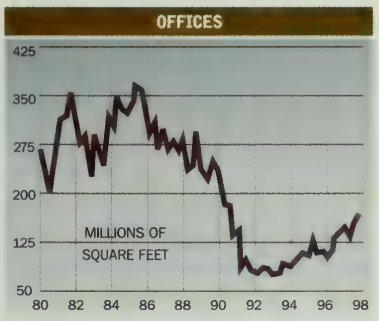
Hotel/casino projects have also been strong. Las Vegas saw the start of several large projects in 1997, including the $500 million Paradise and the $200 million Paris. Through the first nine months of 1997, Dodge data showed 8 million square feet of hotel starts in Las Vegas, eclipsing the previous full-year record of 7 million square feet, set in 1992.

With retrenchment for the limited-service segment soon to set in, hotels will retreat 3% in 1998 to 75 million square feet. A greater amount of full-service hotel projects next year should soften the extent of the decline.

Multifamily housing. After leveling off in 1996, multifamily housing strengthened during the early months of 1997. Activity has shown the greatest pickup in the South Atlantic region and the Northeast while staying lackluster in the West. For all of 1997, an 8% gain to 295,000 units is projected. Although apartment vacancies remain high nationally, some parts of the nation are seeing tightening markets along with rising rents. With this localized push, multifamily housing should continue its moderate upward path during 1998, advancing 3% to 305,000 units.



Offices. The office market is finally showing the healthy percentage growth witnessed by the other income properties earlier in the decade. During 1996, new office projects strengthened as the year progressed, resulting in a 20% gain to 138 million square feet. Metropolitan areas reporting gains of one million square feet or more in 1996 were Atlanta, Phoenix, Dallas, Oakland (Calif.), Charlotte (N.C.), New York, Cleveland, Seattle, Salt Lake City, Portland (Oreg.), and Denver. Nationally, office construction slipped at the start of 1997 but rebounded strongly during the next two quarters. As a result, offices are projected to show a 12% increase in 1997 to 155 million square feet.



Dodge data show that most of the construction upturn is coming from one- to three-story structures, such as those in suburban markets. But the office recovery has begun to include a wider range of structures, and 1997 saw a few high-rise projects make it to the groundbreaking stage, including a $215 million 48-story office tower in Times Square, the first major new office structure to be started in midtown Manhattan in the 1990s.

Positive factors will continue to be present this year, even with a slower economy. As a result, office construction is projected to advance an impressive 14% in 1998 to 177 million square feet.

Manufacturing buildings

Construction of new manufacturing plants in the mid-1990s has reached an extended plateau, similar to that of the 1980s. The manufacturing building category in 1998 is projected to rise another 3% to 168 million square feet. One large project expected to start in 1998 is a $1.2 billion Jeep assembly plant in Toledo, Ohio, according to plans announced by the Chrysler Corporation over the summer. Should the economy slow in 1998 as expected, the level of manufacturing construction after 1998 likely will recede.

- **Construction of manufacturing plants will increase 3% in 1998 to 168 million square feet, advancing for the second year in a row.**
- **The strength of the economy in 1997, with steady gains in industrial production and capacity utilization rates, will spur 1998's higher level of plant construction.**
- **1998 will probably be this decade's peak for new manufacturing buildings as construction catches up with demand generated by strong earlier growth.**

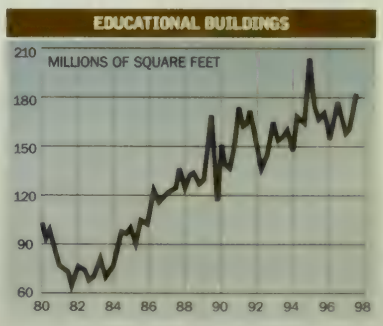
Institutional buildings

Institutional building is getting back on track. It enjoyed a lengthy expansion in the 1990s, but growth had gone flat in 1996. Providing the most support has been recreation-related construction, but an added boost has come from clinics, courthouses, and churches. By the third quarter of 1997, school construction was able to resume its upward trend. With this emerging strength, institutional building for all of 1997 is estimated to rise 4% to 435 million square feet.

The slower-paced economy of 1998 will not dampen the moderate upswing for institutional building, even if bond rates do edge up a bit. Demographic pressures will continue to drive greater construction activity, particularly for schools, and project financing is ample and inexpensive. While federal support for a variety of building programs has been scaled back [see page 29], that amount of funding is small compared with that of state and local governments. On balance, the environment will remain positive for institutional building in 1998, enabling contracting to climb 3% to 447 million square feet.

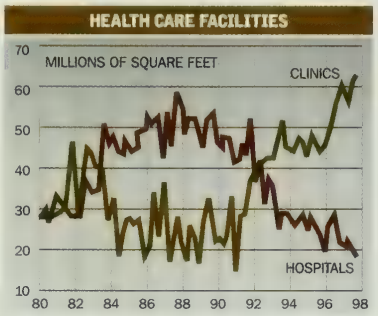
Educational buildings. The demographic pressures are certainly present for further growth in school construction. Over the next 10 years, 29 states, mostly in the South Atlantic and the West, will experience rising enrollments. California will grow most, increasing by 920,000 students, while steep enrollment gains will also be seen in Texas, Georgia, North Carolina, Arizona, Virginia, and Florida. Stable-to-declining enrollments are projected for the District of Columbia and 21 states, most of which are located in the Northeast and North Central regions.

Funding is necessary for new construction to take place, and the passage of recent bond measures across the nation indicates more money is becoming available. In the November 1996 elections, a number of school construction initiatives passed, such as a $1.8 billion measure in North Carolina, a $643 million measure in Nevada, and a $228 million measure in Virginia. In June 1997 California voters approved more than $1.3 billion in school bond measures, while



Los Angeles voters in April approved a $2.4 billion measure, with the proceeds to finance needed renovations and repairs over the next 10 years. This money may at least be partially responsible for the increased amount of school construction taking place in the second half of 1997, and the push will carry over into 1998. With such financial support, school construction is projected to climb 7% in 1998 to 181 million square feet.

Hospitals and other health care facilities. The last few years have been difficult for hospitals, since the increasing power of HMOs has led to more hospital mergers and closings. For 1998, hospital construction is projected to remain flat at its current low level, while clinic construction (sparked by pressure from managed-care providers to move procedures from inpatient to outpatient) eases back from its 1997 surge. This results in a mild 3% decline to 74 million square feet for the health care category.



Other institutional buildings. After sliding 12% in 1995, the public building category made a partial 5% rebound in 1996 and was poised to climb another 4% in 1997 to 43 million square feet. About half this category consists of detention facilities, which reached an all-time high of 25 million square feet in 1994.

The prison segment of public buildings fell to 17 million square feet in 1995, before posting a 1996 total of 20 million square feet. The pressure for new prison construction remains strong, though, due to the sharp rise in incarceration rates and overcrowding from the mid-1980s to the present. Whether prison construction will continue to grow nationally depends on funding, and it's assumed that spending by federal and state governments next year will remain close to current levels.

- **Square footage of institutional projects will advance 3% in 1998 to 447 million square feet.**
- **Rising student enrollments and overcrowded classrooms will spur more school construction as this market continues to strengthen following its 1996 pause.**
- **Segments of institutional building that posted strong growth in 1997—clinics, theaters, sports arenas, and churches—should remain high in 1998.**

Other segments of the public buildings group are likely to move in divergent directions in 1998. Boosted by the increase for the General Services Administration's construction program, courthouse projects were up about 20% in 1997. This rise is not likely to be maintained in 1998, however, given scaled-back federal funding. Post office construction also picked up in 1997, and this improvement is more likely to continue into 1998. In early October, the U.S. Postal Service approved its five-year capital plan, which includes facility commitments of $1.9 billion for fiscal 1998, up from the prior year's $1.7 billion. The overall public buildings category should produce a 3% gain in 1998 to 44 million square feet.

Religious construction was robust in 1997 and is expected to climb 25% to 40 million square feet, which would be this category's greatest amount in 30 years. A slower pace for the economy in 1998 is not expected to dampen the prospects for religious construction, which has shown a tendency to lag economic activity. Another year at 40 million square feet is projected.

Construction of recreation-related structures (theaters, convention centers, sports arenas) has shown steady growth since 1993. In 1996 this category climbed to 60 million square feet, its highest level since 1973, led by a 45% surge for new theater projects and a 34% jump for sports arenas. Major cinema chains are in the midst of an expansion push, with theaters going up as part of a stand-alone facility or as part of a retail complex. Sports arena starts in 1997 have included the $250 million baseball park for the Milwaukee Brewers, the $245 million baseball park for the Seattle Mariners, and a $72 million indoor arena in New Orleans, adjacent to the Superdome. With this support, contracting for the overall amusement category in 1997 was projected to rise 11% to 66 million square feet.

Maintaining cruising speed

Adding up the dollar amounts of the various sectors results in a gain of 3% for 1998. To some extent, the picture is similar to what occurred in 1997. Single-family housing will not show much in the way of growth, but it will remain at what can be considered a healthy level of activity. Improvement by other categories will be necessary to keep the industry-wide expansion going, and an economy advancing at the anticipated 2.3% should allow this to occur.

The most likely candidates for strengthening in 1998 are offices and schools, as each should benefit from enhanced construction funding. The manufacturing building category also appears to be a safe bet for at least a modest increase, due to its lagged response to 1997's strong business climate. While the public works sector at mid-October is subject to uncertainty, given the pending status of important legislation, the healthy fiscal posture of state and local governments will continue to provide a base of support. Retail construction is probably the category most vulnerable to decline, but severe retrenchment is not likely to occur in a moderately growing economic environment.

What are the risks in 1998? A major stock market correction might trigger a loss of consumer confidence, leading to a sharp slowdown in consumer spending and possibly a mild recession. The Federal Reserve would then take quick action by lowering interest rates, limiting the extent of the decline. Or the economy will continue on a strong growth track, putting upward pressure on wages and ultimately prices. The Federal Reserve falls behind the inflation curve and is forced to raise interest rates substantially over several rounds of monetary tightening. This has a quick dampening effect on housing, but the full extent of the ensuing slowdown won't be felt until 1999 or 2000. While these scenarios are plausible, the most probable one remains another "soft landing" taking place in 1998, whether it is engineered by the Fed or it happens on its own. And, it should be remembered, the soft landing of 1995 still permitted growth by both income properties and institutional building.

When the lengthy expansion of the 1990s started back in 1992, it was clear that it would assume a different character from that of earlier construction cycles. The depressed condition of commercial real estate at that time ensured that the cycle would unfold in a much more gradual manner, which also gave it the potential for greater staying power. The steady demographic support for single-family housing also contributed to stability, as did the greater role now being played by institutional building and public works, two sectors that typically avoid sharp fluctuations. Another year of moderate growth is not a sure thing, but both the construction industry and the economy are not currently facing the imbalances that were present at the end of the previous decade. The 3% gain predicted for total construction in 1998 makes it seven straight years of growth, meeting the potential for a lengthy and well-paced expansion during the 1990s. ■

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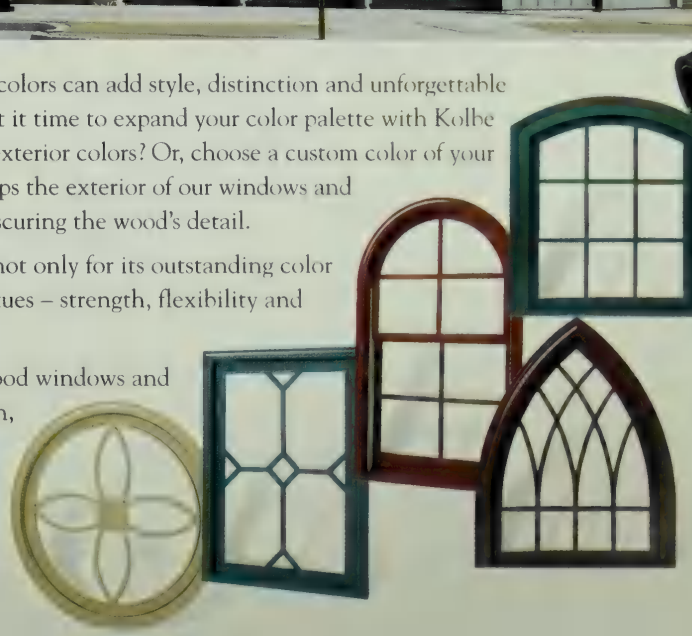




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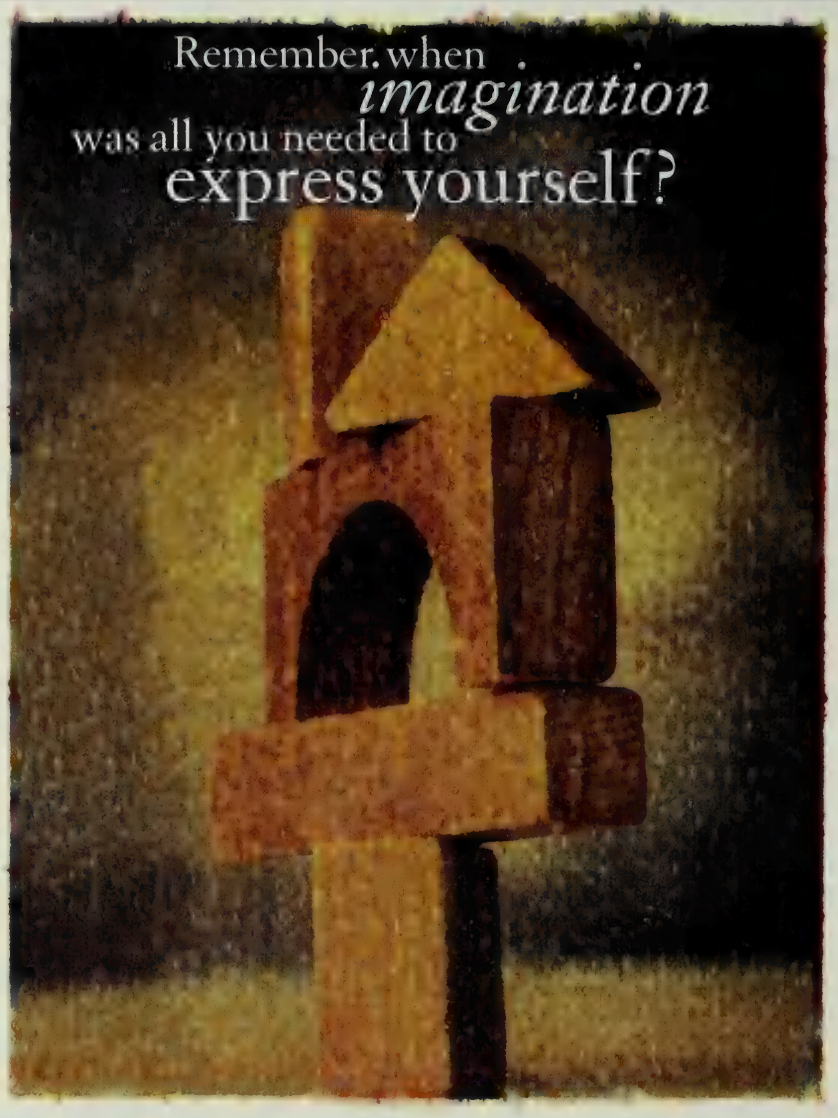
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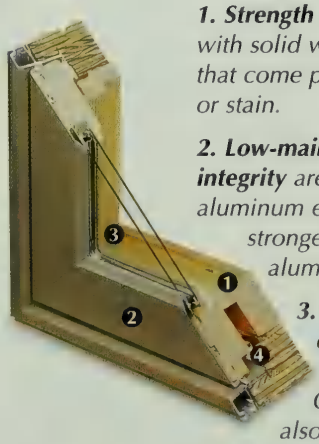




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Visible in daylight only as recesses, Commerzbank's sky gardens become a presence on the skyline at night.

With its naturally ventilated skin and gardens in the sky, Foster and Partners' COMMERZBANK reinvents the skyscraper.



by Mary Pepchinski

It has been called an "energy churner with celestial gardens," a "column of advertising," the "eco-tower," and Frankfurt's "only true skyscraper." Such varied reactions to Sir Norman Foster and Partners' Commerzbank express German ambivalence toward tall buildings, which have often been criticized as energy wasters and symbols of the overweening domination of economic interests over the collective identity of the city. This tower has drawn so much debate because it is the most ambitious attempt yet to integrate environmentally responsible technologies into a tall building as well as reinterpret the type in a way that benefits both workers and the surrounding city.

The Commerzbank headquarters is a product of the unique political and economic climate that existed in Frankfurt-am-Main in the early 1990s. At that time, the city was governed by a coalition of Social Democrats and "Greens," who had resisted large-scale development in the city's historic center. Once in power, though, the coalition was reluctant to alienate the interests that underpinned the city's economy. Bowing to pressure from the banks, officials allowed a high-rise financial quarter to develop between the main train station and the historic center (the Romer), an area well served by public transportation. While erecting skyscrapers enabled the banks to concentrate their operations in emblematic structures, the city, in exchange, did not hesitate to impose a range of requirements to make tall buildings more acceptable within the cityscape.

When Commerzbank, one of Germany's leading banks, elected to build a new high-rise adjacent to its existing 348-foot-high tower in the heart of the new banking quarter, Green Party politicians, interested in seeing their energy-conserving agenda incorporated into the design of a prominent high-rise, urged the company to erect a "green" skyscraper. The bank embraced the idea and in 1991 sponsored an invited competition for an ecologically oriented building, which was to save energy, be economical to operate, offer a flexible workplace, and present a positive corporate image.

The winning team, Foster and Partners, proposed a triangular plan, with the elevator and stair cores pulled to the apexes so that a 49-story ventilating atrium could be carved out of the tower's center. The configuration was shaped to maximize the amount of daylight entering the building, optimize views, and minimize shadows cast by the new tower on the old. (The old headquarters is only 26 feet away from the new building's western corner.) In a break from the high-rise norm, Foster proposed 13 three-story-high gardens spiraling around the atrium. Although the gardens and atrium added volume to the building, they allowed internal and external offices to be naturally ventilated and receive direct sunlight, as mandated by German building codes.

The scheme also offered a new vision of office work. The triangular form divided the floor plate into three areas that were of manageable size but deep enough that perimeter private offices could face an informal internal space, suggesting a less hierarchical, more interactive office culture. The gardens also would offer settings for informal meetings

Mary Pepchinski is a Berlin-based architect, teacher, and writer.

Project: *Commerzbank, Frankfurt, Germany*
Architect: *Sir Norman Foster and Partners—Norman Foster, Spencer de Grey, Ken Shuttleworth, Mark Sutcliffe, Brandon Haw, Hans Brouwer, David Nelson, Robin Partington, Graham Phillips, Stefan Behling, Winston Shu, John Silver, Paul Kalkhoven, Chris Abell, Arthur Branthwaite, Chris Eisner, Tom Politowicz, Christopher Allercamp, Giuseppe Boscherini, Simon Bowden, Thomas Braun, George Brennan, Caroline Brown, Eckhardt Burling, Angus Campbell, Kei-Lu Cheong, Charles Collett, Penny Collins, David Crosswaite, Nigel Curry, John Drew, Matthew Downing, Alex Gounaris, Pauline Hanna, Ken Hutt, Nadi Jahangiri, Mike Jelliffe, Michael Jones, Joachim Kappeler, Natalie Maguire, Nidolai Malsch, Matthias Massari, Stig Mikkelson, Paul Morgan, Uwe Nienstedt, Swen Ollmann, Donia Parmasche, Stefan Ponur, Logan Reilly, Giles Robinson, Cormac Ryan, Thomas Scheel, Paul Scott, Mandy Bates, Kinna Stallard, Brian Timmoney, Huw Turner, Peter Unkrig, Ken Wai, Andreas Wolff, Robert Watson, Alan Wilkinson-Marten, Louisa Williams, Michael Wurzel*
Engineers: *Ove Arup and Partners with Krebs and Keifer (structural, traffic, fire); J. Roger Preston with Pettersen and Ahrens (mechanical); Schad and Hölzel (electrical)*
Construction Manager: *Weidleplan*





Local officials required a low-scale base to tie the new tower and the old headquarters (above) into the scale of the surrounding area. Shops and housing wrap the block next to the Kaiserplatz entrance (left).

or chance encounters. And the ability to see people on other floors might encourage the dissolution of psychological barriers between them.

It was this integral approach that won Foster the project, explained Uwe Nienstedt, project director for Foster and Partners. The romantic appeal of the gardens and atrium, and the fact that they offered an amenity anyone could appreciate, helped keep the concept intact as cost-cutting pressures mounted during design development.

FOSTER WON A COMPETITION FOR AN ECOLOGICALLY ORIENTED TOWER.

Following the competition, Foster's office collaborated with a range of consultants to optimize the design and to flesh out the structural and mechanical concepts. During this phase, a number of ideas were either eliminated or altered. For example, the original plan, labeled the fish tail because of the way the elevator core extended from one corner (plan, page 76), was reshaped to improve circulation. The skip-stop elevator system was substituted by a conventional type to simplify wheelchair access to all floors, and the cores were tucked into rounded corners. Two bridges leading to the existing tower were also eliminated, as the client deemed this access unnecessary (an underground tunnel links the towers). The atrium was divided into three vertical segments, because detailed analysis —including wind-tunnel tests and computational fluid dynamics testing—showed that breezes would be too strong and hard to control. (The divisions, built in steel-framed glass, also offer better smoke control in case of a fire.) The highest gardens in each division horizontally vent the shaft.

Although zoning limited the tower's height to 607 feet, city planners felt the structure was too bulky for Frankfurt's skyline. They demanded that it become thinner and taller, to the dismay of Commerzbank officials, who wanted larger floor plates and did not want to incur the additional costs. The city prevailed, and the tower's plan became smaller, while its height rose to 725 feet at its western core. A penthouse for mechanical systems and an antenna extend the tower's total height to 984 feet, which makes it, for the time being, the tallest building in Europe.

As constructed, nine 46-foot-high gardens spiral up the tower. Their exteriors are faced with operable, doubled-glazed panels, but they are completely open to the atrium. The tower's gardens are planted according to their orientation: the south-facing gardens are Mediterranean (citrus and olive trees, thymian, lavender), the western are North American (grasses, maples, rhododendrons), and the eastern are Asian (bamboo, magnolias, hydrangea). The combination of gardens and atrium, and the desire for flexible, column-free office space, led the engineers, Ove Arup Partnership, to devise a unique structure (opposite).

The smaller floors mandated by local officials were less of a hardship than first envisioned because the bank reconsidered the idea of meeting areas surrounded by offices ("Kombi-büro"), adopting a conventional plan of mostly private offices. The idea of a communal space—for secretaries and shared resources such as files and meeting areas—remains, but the space devoted to it is now much reduced. Glass office partitions bring light and views into the spaces.

The tower earns its ecological stripes in its handling of the office areas. In a tall building, merely supplying operable windows for ventilation unbalances the mechanical system; even a tiny opening can draw in



SITE PLAN



GROUND FLOOR

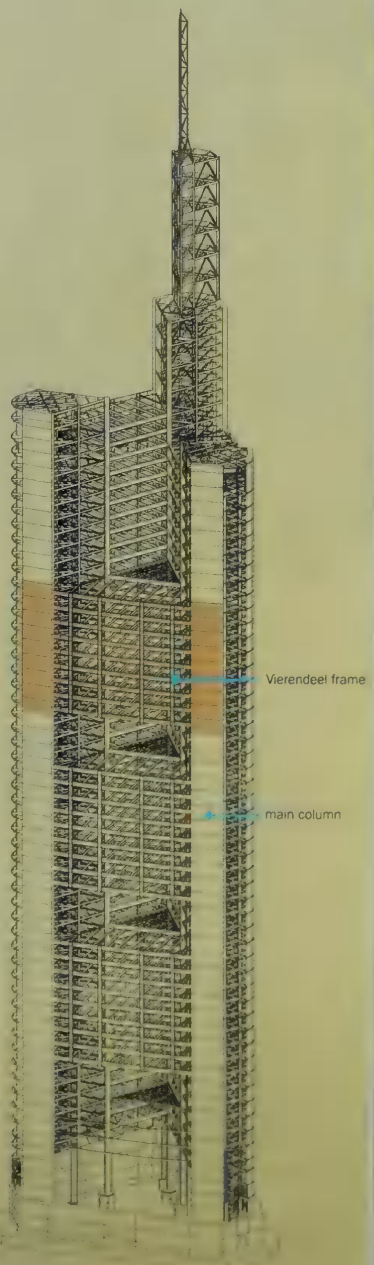
1. *New tower*
2. *Existing tower*
3. *Kaiserplatz*
4. *Main entrance*
5. *Vestibule*
6. *Lobby with atrium above*
7. *Elevator lobby*
8. *Plaza restaurant*
9. *Entrance to auditorium*
10. *Shops/residential*

Commerzbank's unique geometry generated a unique structural solution. With column-free floor plates, no central core, and sky gardens interrupting much of the perimeter, a conventional structural system was out of the question. Ove Arup and Partners, structural engineers, made giant Vierendeel trusses out of the external framing of the eight floors between each garden level (drawing right). They span 112 feet and tie into three pairs of massive composite steel and concrete columns at each corner. (All-reinforced-concrete construction is the norm in Germany.) The column arrangement, with special horizontal link frames that pass between elevator shafts, braces the Vierendeels horizontally. Wind-load assumptions were tested in a wind tunnel, but local regulations did not permit the acceptance of a design based on these results, so the framing sizes are larger than the design team first proposed, according to Ove Arup.

Special software was run to optimize the performance of flanges and webs for beams and columns, which enabled a considerable lightening of the structure. The combination of wind and gravity loads showed that all the Vierendeels resisted similar stresses and could therefore be fabricated identically, which saved money and permitted considerable prefabrication.

Floors not only span column-free between the corners, they span without interruption from interior to exterior. They are concrete-wrapped steel, with beams notched near the perimeter to fit ductwork and other services. The floor-to-floor height is thereby maintained at a modest 12 feet 4 inches. Structurally, the floors act as diaphragms, distributing horizontal loads to the perimeter vertical tubes and bracing them.

The huge concentrated loads on the corner columns and the proximity of the existing Commerzbank tower meant that the design of the foundation was extremely challenging. Because of poor soil quality, many of Frankfurt's towers are on raft-and-pile foundations. Working with local geotechnical experts Katzenbach und Quick, Ove Arup drove 111 concrete piles 149 feet through layers of sand, clay, and gravel to support the massive corner columns in limestone and dolomite. *James S. Russell and Mary Pepchinski*



At the center of the lobby (below) the tower's atrium rises the full height of the building (right). It is divided in thirds by steel-framed glass screens, which offer smoke-passage protection and divert exhaust air through the topmost garden.





a seeming maelstrom. To permit natural ventilation, Foster's office designed a double facade (called a Klimafassade, or climate facade) comprising an exterior layer of fixed, single-glazed, laminated, radar-absorbent glass; a middle air cavity; and an interior double-glazed (with low-e glass) operable panel (details, page 77). Occupants can receive controlled, cool outside air when offices are warm or close off the internal panel; the sun will contribute some controlled solar heat gain in winter.

Conventional perimeter radiators under the floor supply heat when needed. A water-filled grid above the perforated-metal ceiling system is the backup cooling system. When chilled, it absorbs excess heat. Mechanical ventilation supplies only fresh air. The ceiling system also contains recessed lights, smoke alarms, sprinkler heads, and a movement sensor. Wiring is routed through a raised access floor.

FEW WOULD DISAGREE THAT THE TOWER IS THE MOST AMBITIOUS ATTEMPT YET TO INTEGRATE ENVIRONMENTALLY RESPONSIBLE TECHNOLOGIES.

The scheme not only conserves energy, it permits users unprecedented control of their environment. Next to the door, switches control lights and operate both the interior facade panel and the louvers. When the window is activated, a motor runs for half a minute before the top tilts open roughly a foot. The interior office air is immediately cooler and slightly breezy. Due to the aerodynamic profiles of the spandrel vents, there is no noise from the air flowing into the office.

The structure's building management system (BMS) is unusually sophisticated, constantly analyzing ambient conditions and displaying a light to indicate whether the operable facade panels may be opened. The BMS can automatically adjust the curtain wall louvers as well as the fresh air and ceiling-panel water supply. Using occupancy sensors, it shuts off systems in unoccupied spaces. Environmental conditions in the tower gardens are also under BMS control. Based on information provided by weather stations located throughout the building, the system operates the gardens' facade panels to limit swings in temperature and air movement. Under-floor heating also moderates the gardens' temperature in winter months.

Additional environmentally oriented features include washrooms supplied only with cold water and toilets flushed with "gray" water from the cooling towers. Fire stairs are finished with second cuts of granite, economically upgrading their appearance and encouraging their use.

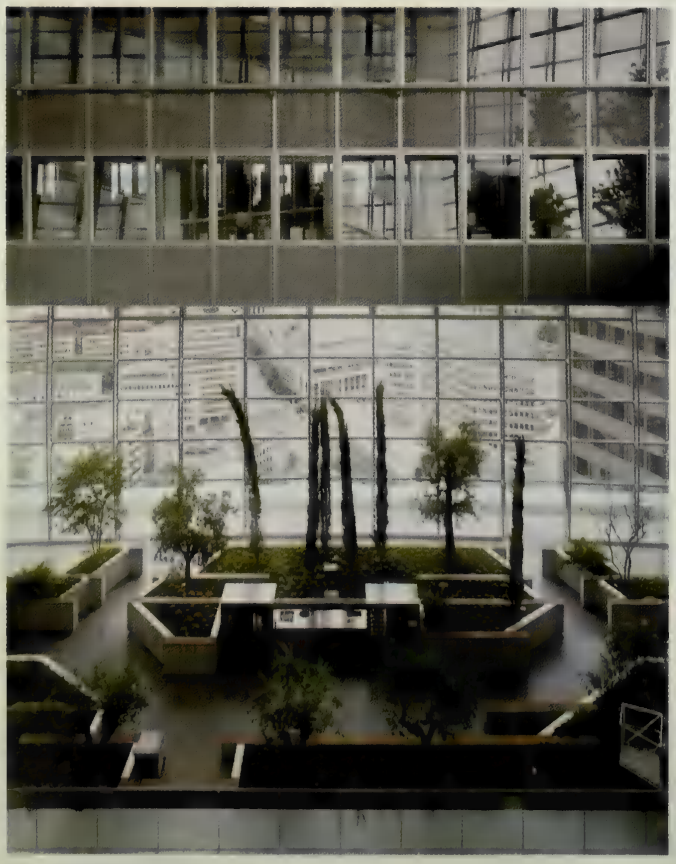
What is it like to be in this towering utopia? It is a heady experience to actually stand in one of the gardens and look across a 12-story-high atrium with two other gardens opening onto it. Your eye is drawn to greenery above and below, which frames the city roofscape beyond. The sun streams in, a cool, fragrant breeze wafts from one garden to another. It's an extraordinary reversal of a Modernist aesthetic: the garden in the machine rather than the machine in the garden.

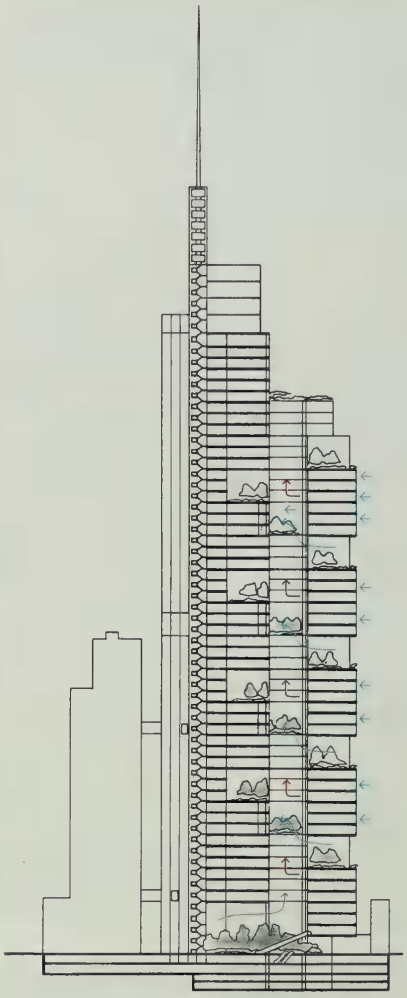
Though Foster's office refers to these atrium segments as villages, the wealth of spatial experiences seems to be more about realizing a sensual aesthetic than redefining the workplace. The gardens feel like outdoor places and function as public spaces: people confer, eat lunch, drink coffee, or simply pause for a moment's reflection. (Two gardens have buffet-style cafeterias; the rest are supplied with vending machines.) You sense that a kind of community has been created, one that could become familiar and intimate, so unlike the usual imposing *(text continues)*



At the insistence of local authorities, the architect wrapped the base of the tower with shops and housing. The most dramatic of these amenities is a skylit café with furnishings designed by artist Alfredo Arribas (left). This café opens onto the lobby rather than the street. It is deep in the block and up a flight of stairs.

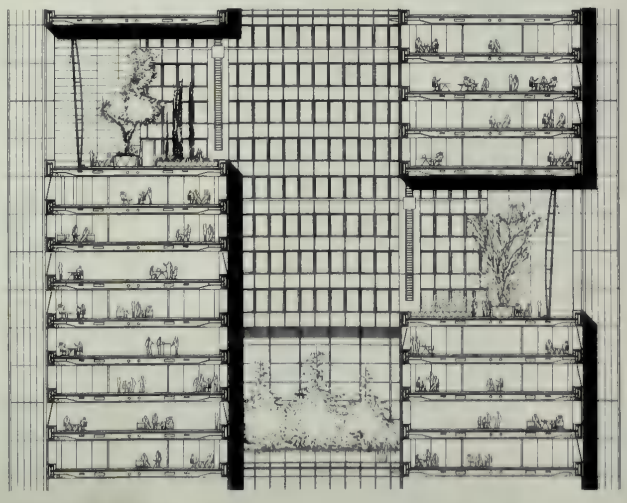






SCHEMATIC BUILDING SECTION

Workers who face the central atrium (opposite) may open windows to vent exhaust air. As warmer air rises, it draws cooler air from the outside via operable panels in the glazed wall (diagram left and photo top left). Exhaust air is vented out the topmost garden in each 12-floor "village." The building management system controls the openings in the gardens' glass facades to compensate for high air velocities in the tower.



PARTIAL TOWER SECTION

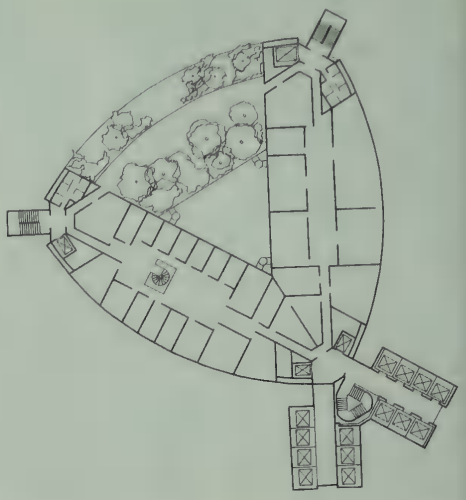


With many floors visible across the atrium, Commerzbank hopes to foster a sense of community among the approximately 150 employees in each multifloor "village."

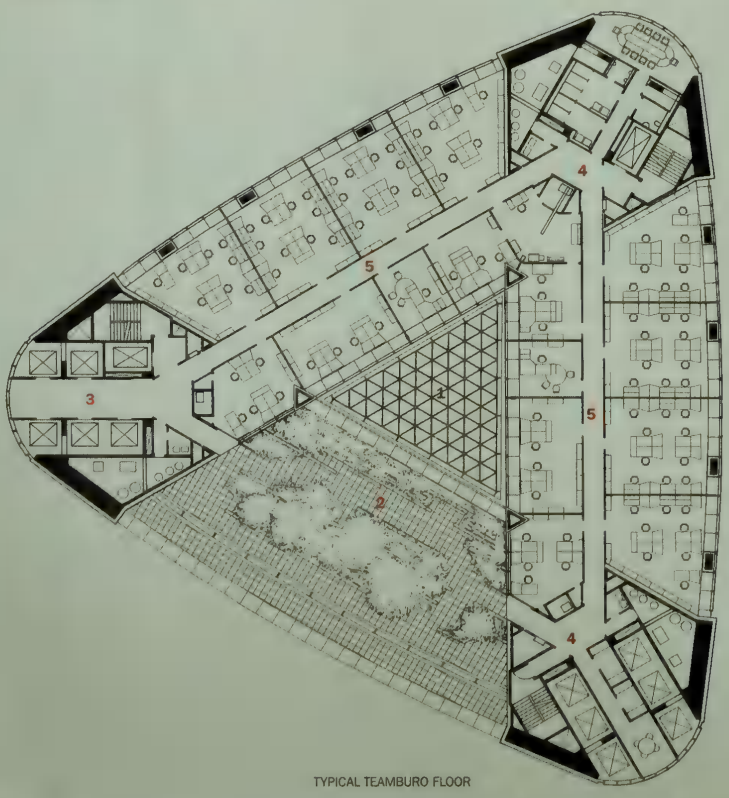


1. *Open atrium*
2. *Outdoor garden*
3. *Active elevator lobby*
4. *Inactive elevator lobby*
5. *Team offices*
6. *Private offices surrounding informal meeting areas (Kombi-büro)*

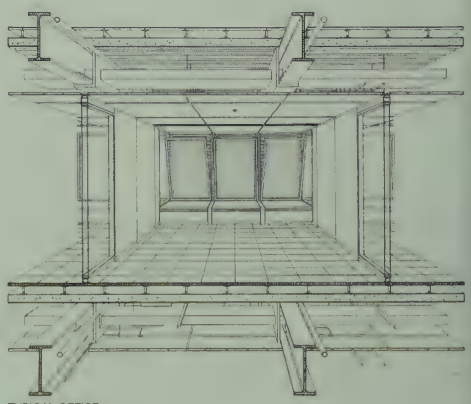
TYPICAL KOMBI-BURO FLOOR



Foster's competition-winning design showed elevator and stair cores pulled out of the mass of the building (above) and deeper floor plates. The original design included more area for team meetings than was ultimately built (floor plans left).



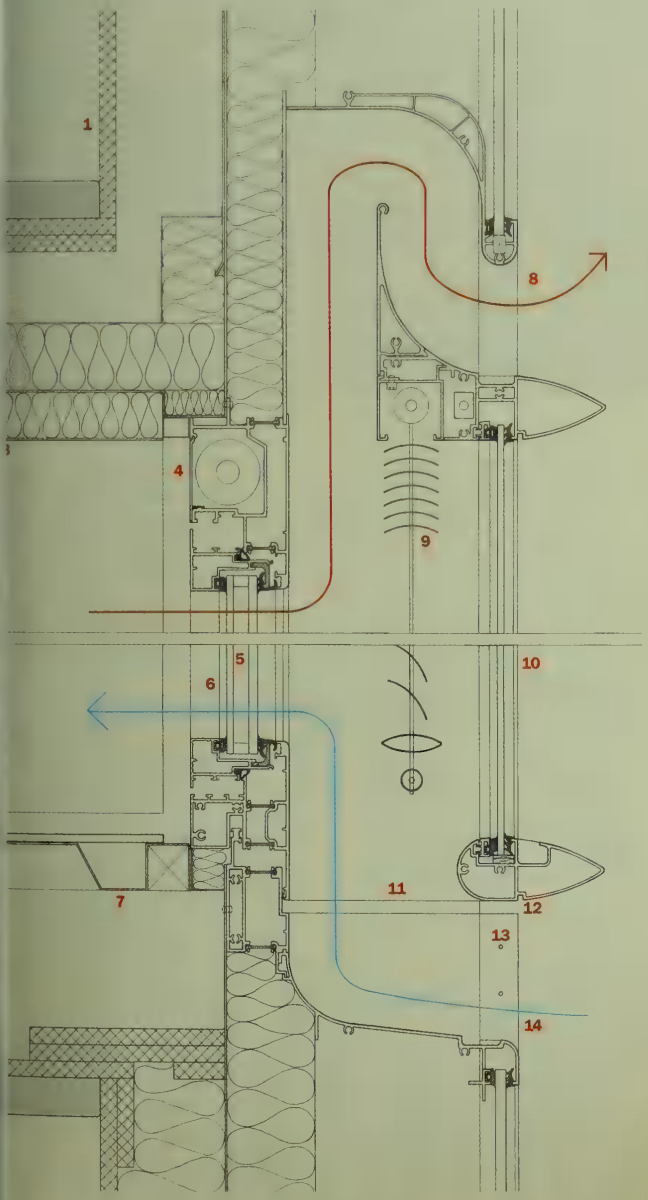
TYPICAL TEAMBURO FLOOR

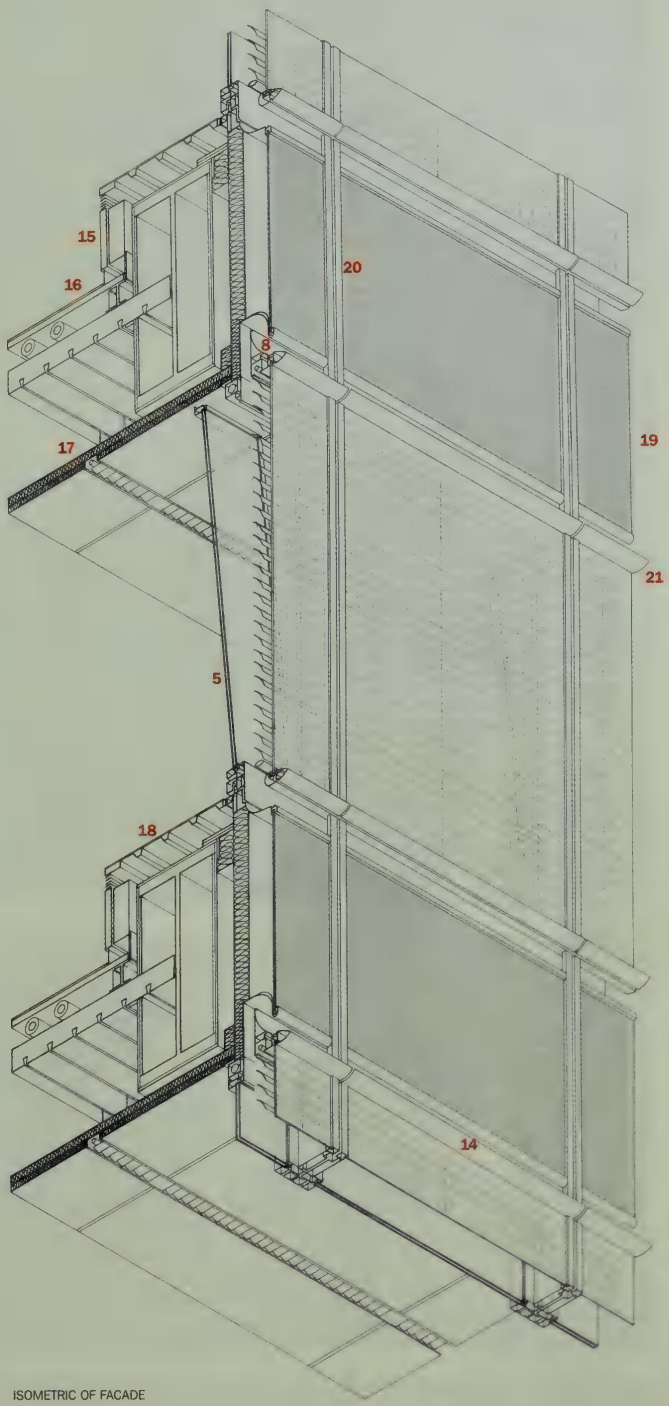


TYPICAL OFFICE



1. *Fire protection*
2. *Insulation*
3. *Chilled ceiling panel*
4. *Window motor drive*
5. *Low-e double glazing*
6. *Operable inner unit*
7. *Metal sill support*
8. *Air exhaust*
9. *Motorized blind*
10. *Laminated outer glass light*
11. *Panel break*
12. *Drip profile*
13. *Vermin wires*
14. *Air intake*
15. *Perimeter convector*
16. *Raised floor*
17. *Perimeter diffuser*
18. *Glass sill*
19. *Glass spandrel*
20. *Mullion with equipment guides*





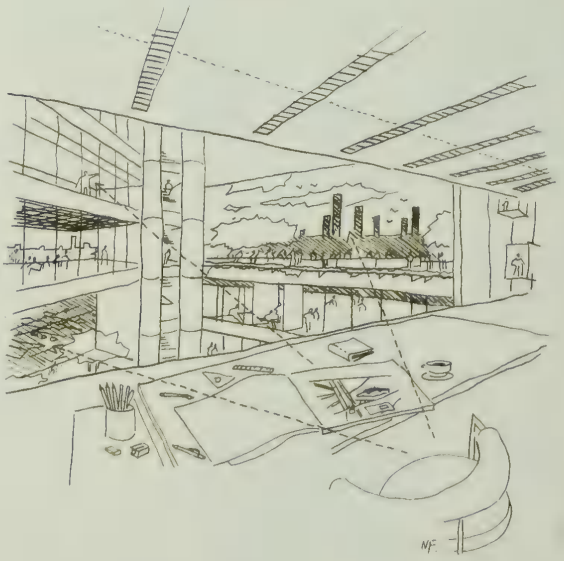
ISOMETRIC OF FACADE

Air flows freely into the space between the two glazed facades (section left) and is admitted to offices only when the user operates the inner panel. The air-handling slots of the double facade are visible on the tower's exterior (photo opposite). The facade is tightly integrated with the building's mechanical and lighting systems (section opposite and isometric above).









As built, the offices are impressively true to Foster's idealized vision of a transparent workplace (above and bottom left). Light even streams into the team-meeting areas at the deepest point of the floorplate (top). With floor-to-ceiling glass, glare-controlling automated internal shutters are essential (top left).



downtown tower. Yet there is a voyeuristic quality to this world of glass walls and partitions, where everyone can be watched, where each person in pursuit of his or her individual task is perpetually on display.

The building is not without mundane problems, evident in a recent visit. In the Kombi-büro areas, some workers were actively using their communal space as intended, while others used it to store extra file cabinets. On the 35th floor, where a cafeteria is located in the garden, food smells drift into the adjacent corridors at lunchtime. Conversations from a crowd in a garden—even ambient noise from open office windows—made the atrium surprisingly noisy. The standard office furnishings were neither designed nor chosen by Foster and Partners, and although they are bright and functional they are clearly not consistent with the architectural aesthetic.

To tie the tower into the prevailing low scale of the neighborhood, local officials mandated that the tower be wrapped by a seven-story structure containing shops, housing, a 500-seat auditorium and parking spaces for 300 cars and 200 bicycles (page 70). But because the combined lobby and public plaza is located one story above street level and is barely visible to the average pedestrian, it acts as more of a barrier than an extension of the life of the city. Also, the vast main entry stairs are located on a lifeless side street and are therefore little used; the small rear entry stairs, leading from the heavily trafficked Kaiserplatz, seem to be much preferred.

While the tower has been praised in the German media, it has not silenced skyscraper skeptics. Critics have called it too massive and more of a dominating presence than early renderings promised. Its elevations are also less crystalline and transparent than anticipated, encouraging those who feel the whole endeavor—gardens and all—is an arrogant fortress for an elite class.

It's too soon to know if Commerzbank will be seminal, whether this vision of "the workplace of the future," as Nienstedt calls it, will stimulate others to take the next step. It may portend a shift of tall-building innovation away from the United States, the traditional incubator of skyscrapers. Naturally ventilated double curtain walls are appearing on numerous projects now, for example.

In the short term, of course, the measure of such a radically new skyscraper is whether its technical innovations save energy and whether gardens and other informal meeting places improve satisfaction and productivity. Dr. Horst Grüneis, director of Commerzbank's Central Building Department, estimates that the building requires 25 to 30 percent less energy than the already strict German norms, a difference attributable primarily to low air-conditioning loads. Real numbers, he says, "can be calculated in two or three years, after the systems have been given a fine-tuning." Grüneis says he is satisfied. "We are given lots of praise when our office workers leave at night and tell us that they don't feel tired—this means that their productivity increases. This is more important to me than great architecture or sky gardens." ■

Sources

Facade: *Josef Gartner & Co.*
Glass: *E. Glasbeton*
Demountable partitions/chilled ceiling system: *Clestra Hauserman, Huppe Form*
Suspended metal ceilings: *Schmid Montage*
Automatic glazed doors: *Glasbau Hahn*
Lock system/hardware: *Erbacher and Kolg, Kaba Gallenachschutz*

CRITICISM: Richard Gluckman's latest project, THE GEORGIA O'KEEFFE MUSEUM, shows why he's an architect of choice for the art world.



by David Dillon

Richard Gluckman Architects occupies a warehouse in TriBeCa with concrete floors, large industrial windows, and spectacular views of the Hudson River and lower Manhattan. The office is more than a studio; it's a statement of architectural principles: keep it simple, work with the givens, don't impose.

Gluckman, AIA, started developing these principles in the mid-1970s, when he arrived in New York City from Boston to open a practice with his roommate from Syracuse University and by chance found himself designing a town house for Heiner Friedrich, then director of the Dia Foundation (now Dia Center for the Arts). Dia was just beginning to acquire and renovate industrial buildings to exhibit the work of Donald Judd, Dan Flavin, James Turrell, and other Minimalist artists. Soon Gluckman was doing the renovations and serving as an expediter on various major installations, such as Walter De Maria's *Broken Kilometer*. Although Gluckman knew little about art, the way these artists handled space convinced him that they were the best architects of the 1970s. "Heiner kept saying, 'Don't design. Strip the room to its essentials so you know what it's about.' It wasn't Minimalism to me. It was just a reductive process," he says. Thanks to Friedrich and Dia, Gluckman was able to avoid the Postmodern invasion of New York in the early 1980s, and when it was over he found himself the architect of choice for many prominent contemporary artists.

By now Gluckman has designed some 40 commercial galleries in the United States and Europe, as well as the Andy Warhol Museum in Pittsburgh [RECORD, September 1994, pages 74–79] and the new Georgia O'Keeffe Museum in Santa Fe. Most are renovated spaces carved out of inherited buildings, and all display the spare, understated aesthetic that has enabled him to visually support such powerhouse talents as Richard Serra (for whom he designed a house), Rem Koolhaas (a collaborator on a Manhattan performance space), and the late Gianni Versace (a retail client). "They trust me because they assume I'm unassuming," Gluckman says. "They know that I'm not going to infringe on their work by inserting some egocentric stylistic element into the space. I'm committed to the art, and that's what has developed my reputation."

The Georgia O'Keeffe Museum, the first major museum ever devoted to the work of an internationally known woman artist, was an ideal commission for Gluckman. Located a few blocks from Santa Fe's main plaza, within the shell of a 1905 Spanish Baptist church–turned–art gallery, it is a thick-walled, flat-roofed structure that doesn't call attention to itself. Because of the city's strict historic ordinances, which regulate the height, color, materials, and massing of every downtown building, Gluckman had few architectural opportunities on the exterior. So he focused most of his energies on the galleries.

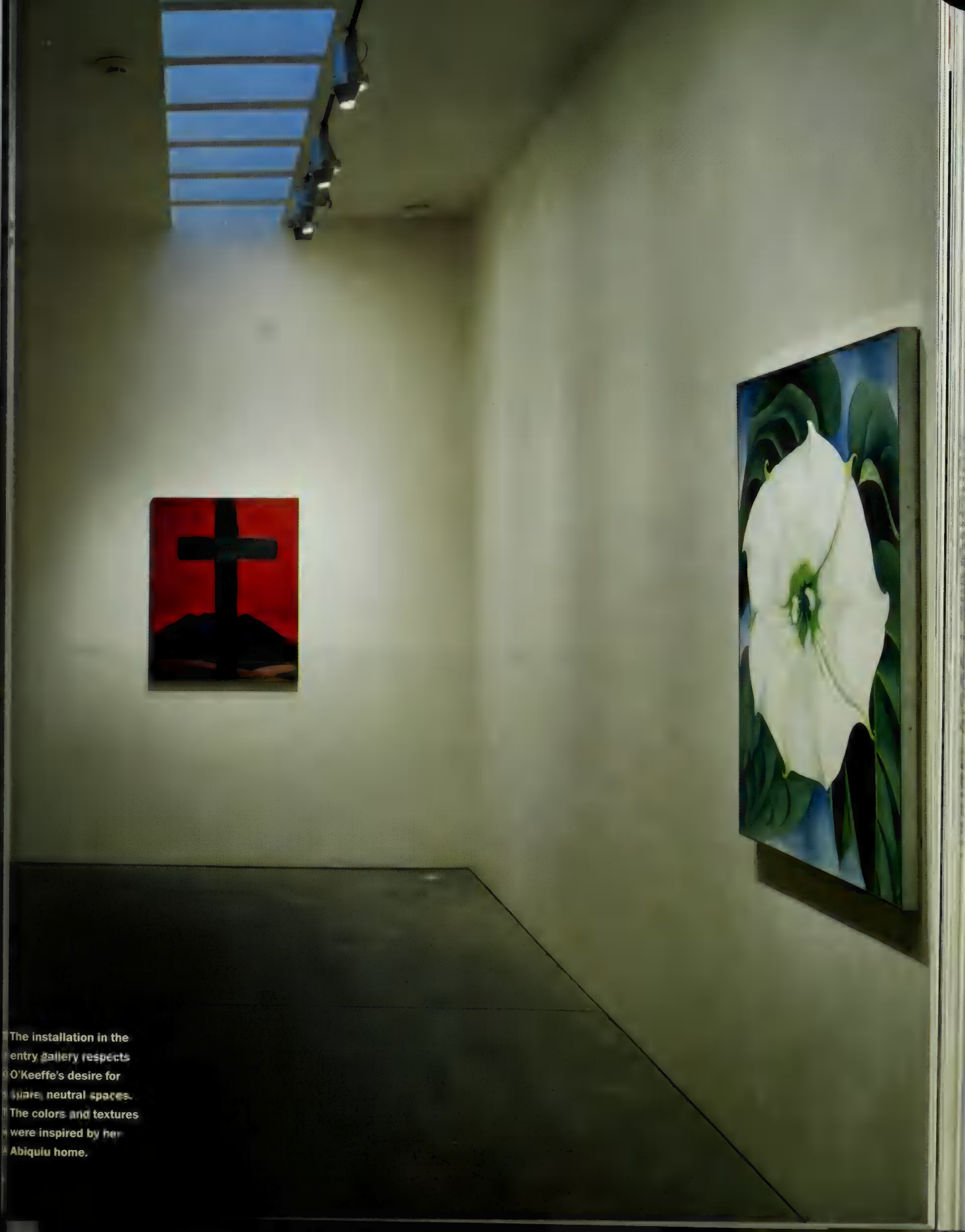
During her lifetime, O'Keeffe was dictatorial about how her work was displayed, often rehanging entire shows at the last minute because they didn't conform to her vision. She demanded spare, neutral spaces, with plenty of room between paintings and nothing to disturb the meditative calm. Gluckman's design accommodates these demands without sacrificing architectural sophistication. His galleries are subtle combinations of hand-plastered walls, textured terrazzo-ground floors, and rich natural light similar to that found in O'Keeffe's landscapes. Their restraint makes the art pop, while their spatial variety gives the tiny building grandeur. Gluckman took many of his design cues from the colors, textures, and pragmatic simplicity of O'Keeffe's home in Abiquiu, 50 miles north of Santa Fe.

"We brought back soil samples to get the color of the plaster right," Gluckman explains, "and the floors have some of the qualities of earth. But the references in the museum are also to the entire Southwest and to the history of that building. Abiquiu was just one source."

The galleries form a subtle procession that provides a comprehensive introduction to O'Keeffe's art and a clear sense of progression

Contributing Editor David Dillon is the architecture critic for the Dallas Morning News. *His last article for* RECORD, *in the November 1997 issue, was on competitions.*

Project: *The Georgia O'Keeffe Museum, Santa Fe, New Mexico*
Architect: *Richard Gluckman Architects—Richard Gluckman, AIA, principal-in-charge; Robert White, project architect; David Saik, Raphaela Bortoluzzi, project team*
Architect of Record: *Greg Allegretti, AIA*
Engineers: *Ove Arup and Partners (structural, mechanical); M & E Engineering (electrical, plumbing)*
Consultant: *Richard Wilder (landscape)*
General Contractor: *Wolf Corporation*



The installation in the entry gallery respects O'Keeffe's desire for spare, neutral spaces. The colors and textures were inspired by her Abiquiu home.







The massing, setbacks, and windows of the Georgia O'Keeffe Museum reflect Santa Fe's desire for "residential character"(top). Gluckman inserted the museum into a tight downtown site previously occupied by a church–turned–art gallery (plan above). The courtyard features O'Keeffe's sculpture *Abstraction, 1945* (right).




SOUTH ELEVATION

The building footprint follows the perimeter walls of previous structures. The museum shop, the orientation gallery, and offices were squeezed into a two-story wing.

from early to late work. Although only 116 of her estimated 2,200 works are here, it's still the largest collection of O'Keeffes in the world.

The first gallery is an O'Keeffe primer, containing only three paintings: *Black Cross and Red Sky, 1929; Black Place III, 1944;* and *Jimson Weed, 1932,* one of her monumental flower paintings. Spirituality, landscape, and nature—her great themes—are presented here in a clear, straightforward way that anticipates the drama to come. The remaining galleries are more spatially eccentric, recalling the interior plan of the church and the gallery. Walls curve or slant, ceilings hover or soar, and skylights are placed asymmetrically in order to generate a spatial energy to complement the visual energy on the walls.

A dark, cloistered space with a gently curving interior wall contains works on paper, including watercolors from the 1917 *Nude Series* and several vivid Texas landscapes painted while O'Keeffe was an art teacher in Amarillo. Neighboring galleries feature early pastels, flower paintings, Southwestern oils, and seldom-seen paintings of kachina dolls.

The skylights are critical for leading visitors from gallery to gallery. In one room they wash the walls with the sharp, even light found in many O'Keeffe landscapes; in another the skylight beckons from a corner, like an opening in a kiva. Their irregular placement creates a mood and a pacing that underscores the narrative of the art.

The most dramatic space, the climax of Gluckman's carefully orchestrated procession, is the main gallery, which contains large abstract landscapes such as *My Last Door, 1954* and *Spring, 1948*. This gallery was the sanctuary of the Baptist church and is still framed by the narthex and side chapel. Here the walls rise to a broad central skylight, which proclaims the importance of the room and the art it contains. O'Keeffe spent much of her life in sacred places, from Anasazi ruins to her house in Abiquiu, which was once a Catholic convent. It is entirely appropriate that her museum have a religious space as well.

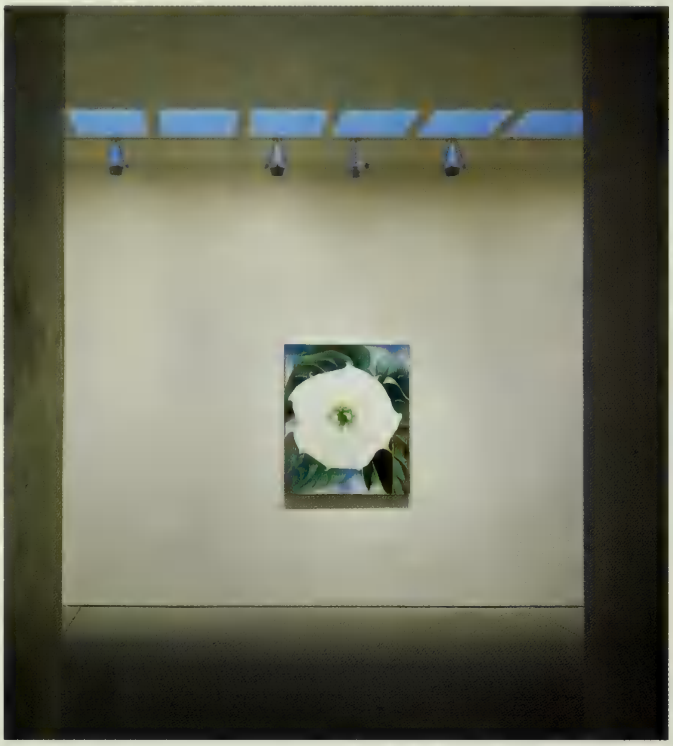
Gluckman agonizes over details that other architects might ignore. The hand-troweled plaster walls turned out pinker than he wanted, and in one gallery the ceiling joists are not parallel to the side

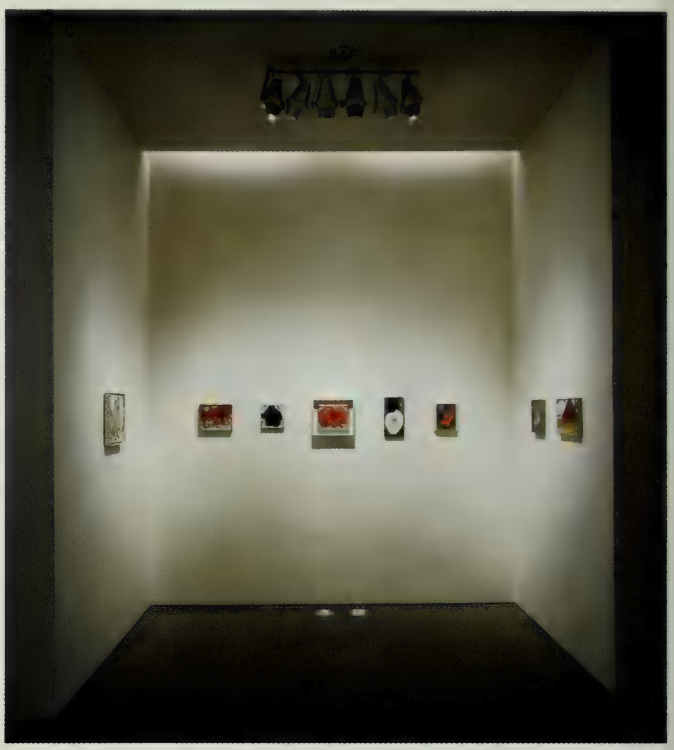
O'KEEFFE DEMANDED SPARE SPACES, WITH ROOM BETWEEN PAINTINGS.

walls. "If only we'd had a few more months we could have fixed that," he says ruefully.

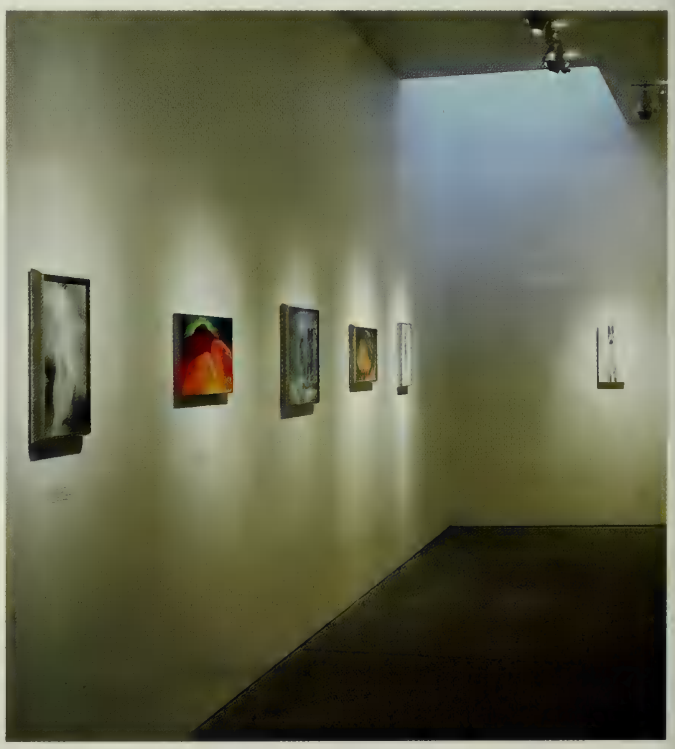
The museum's nine galleries surround an open courtyard. One corner contains medicinal sage and jimson weed, a bleached cow's skull, and a solitary tree—all icons of O'Keeffe's art; her cast-aluminum sculpture *Abstraction, 1945* stands in another corner. The courtyard is the museum's most explicit reference to Abiquiu and a work of art in its own right.

At 13,000 square feet, the Georgia O'Keeffe Museum is extremely small to serve its visitors. (Within three months of its opening, the museum had already exceeded its projection of 150,000 visitors annually.) The scale, like the facade, reflects the demands of the historic-district review board, which imposed a 23-foot height limit even though a nearby hotel exceeds 80 feet. The cap forced offices, the museum shop, and an orientation gallery into a small wing and reduced storage and conservation areas to a bare minimum. But the most serious consequences have been for circulation. Even though 60 percent of the interior is galleries—

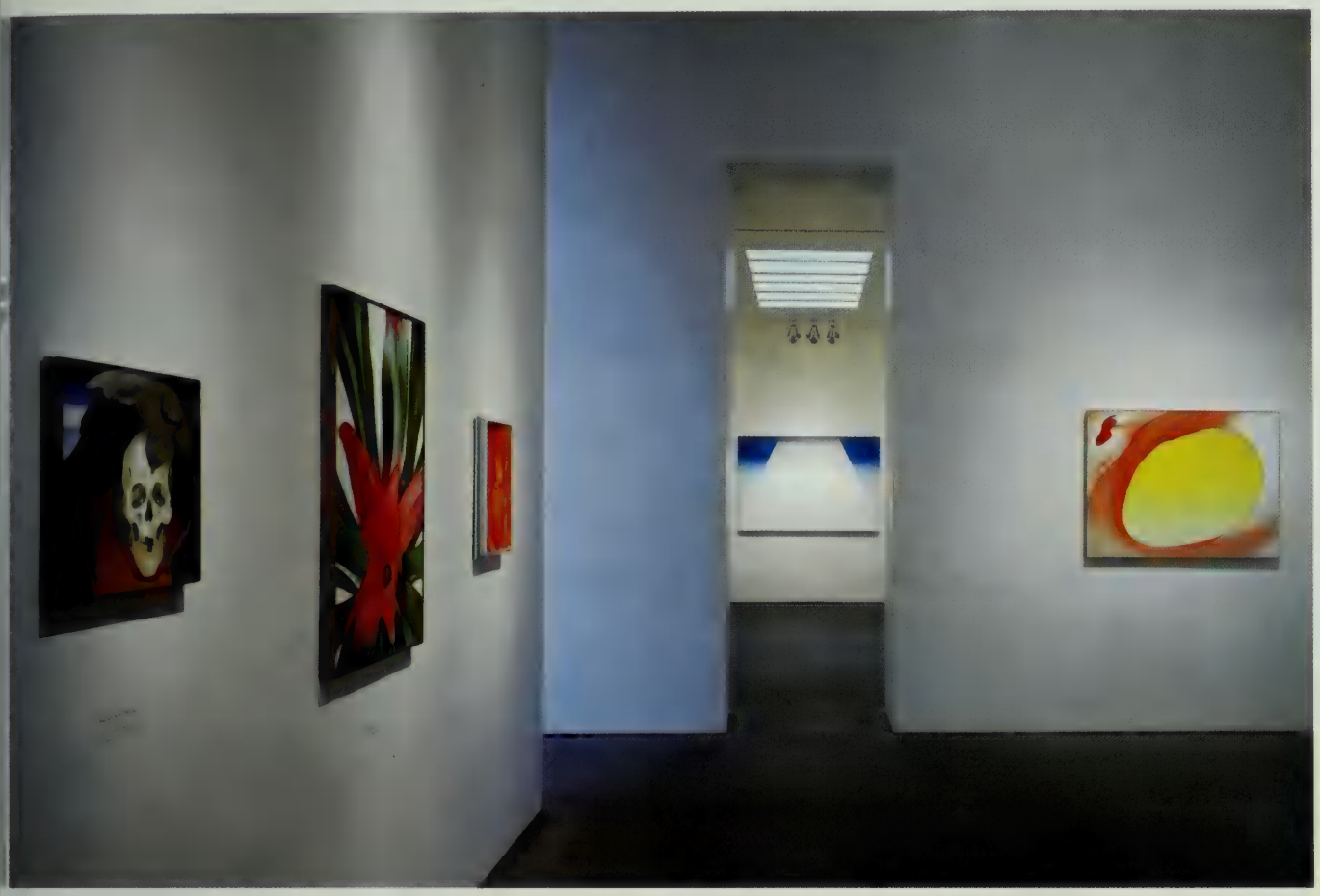








Gluckman varied the position of skylights to create visual and spatial drama throughout. In the entry gallery (top left) the skylight is a slender rectangle; in other galleries it is a nearly invisible slot or a mysterious corner (top and bottom right). In the main gallery (bottom left) the skylight is centered to emphasize the space's importance.



the standard is 25 to 30 percent—visitors have to retrace their steps through the exhibition because there are no secondary exits. Plans to extend the museum into a courtyard next door were rejected. As a result, the museum is limiting attendance to 200 people at one time, which means long lines of unhappy tourists on the sidewalk during peak periods. A second phase of construction on nearby blocks is already under discussion.

Santa Fe considers visual coherence an asset in an era of chaotic urban sprawl. But there is also a hint of mummification in design regulations that deem a pseudo-adobe supermarket with vigas poking through all four walls more acceptable than a thoughtful modern building. In the name of safeguarding the public realm, the boards frequently design the buildings. "Review boards should be involved in restoration, not renovation," argues Gluckman. "We wanted a more abstract quality on the street, for example, but were told to add more windows so that the museum would look more residential. But it's not a residential building."

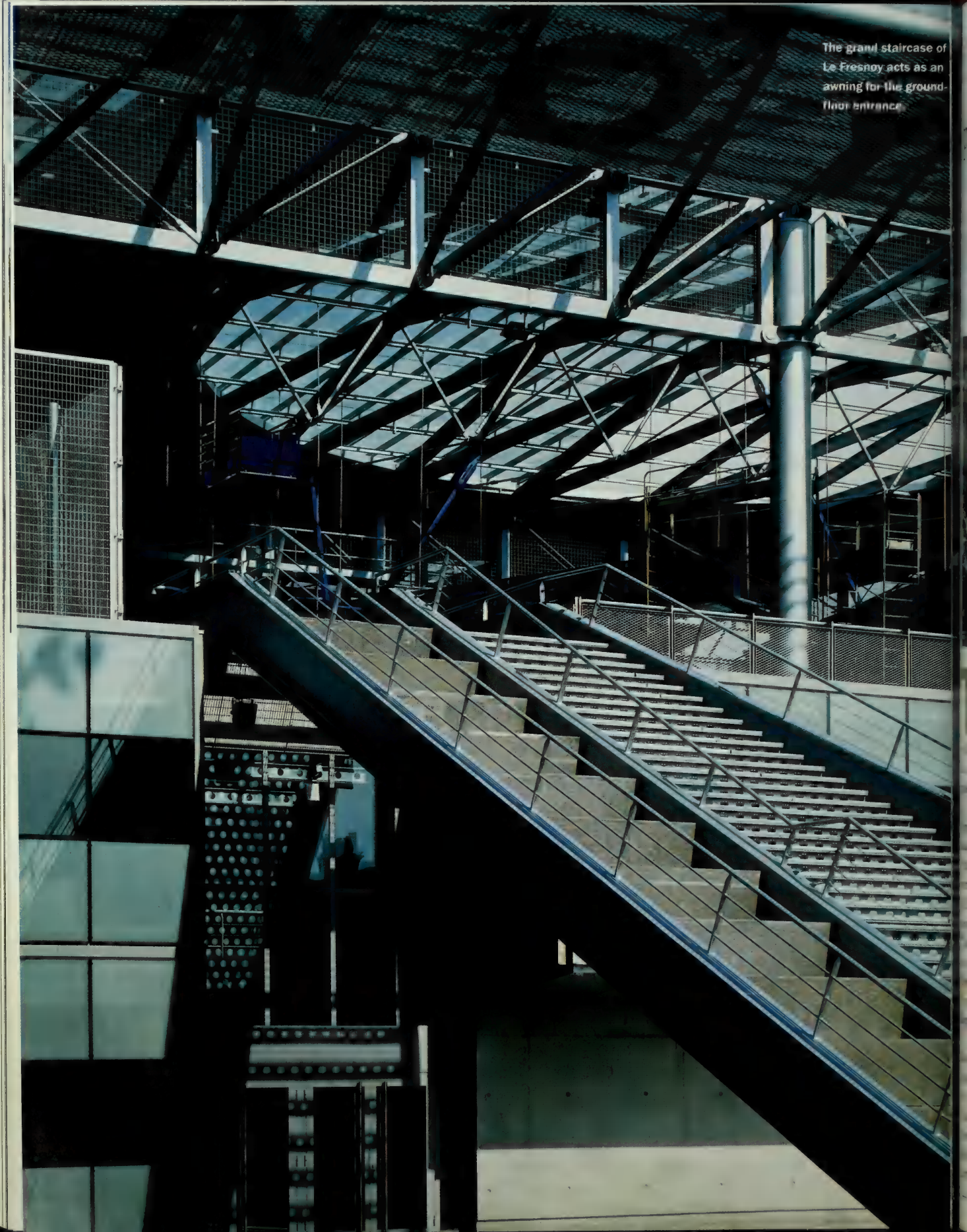
Despite all the restrictions, Gluckman has given Santa Fe a subtle and sophisticated museum that honors the art it houses and the community it serves. What he wants now is to design a new building, from the ground up, without accommodating the whims of previous owners and occupants. For all his success, Gluckman resents being typecast as a "gallery guy" who shouldn't be trusted with a facade. Even his most celebrated current project, the $25 million renovation of the Whitney Museum of American Art in New York City, designed by Marcel Breuer, will be largely invisible from the street. Yet in its mix of office space and permanent-collection galleries, it's more complex than most new buildings. "It's a backbreaker," says Gluckman.

The architect's strong showing in the recent Modern Art Museum of Fort Worth competition, won by Tadao Ando, may change his course. He responded superbly to the museum's request for a building that "encourages the contemplation of art without distracting details." His five spare pavilions, connected by a seemingly floating roof of louvers, light boxes, and sunscreens, promised a rich dialogue between structure and light, viewer and space. The quiet elegance and spatial inventiveness of a Gluckman gallery was re-created at a civic scale. A tough loss but, Gluckman hopes, a preview of things to come. ■

GLUCKMAN'S GALLERIES ALL DISPLAY AN UNDERSTATED AESTHETIC THAT VISUALLY SUPPORTS THE WORK OF POWERHOUSE TALENTS.

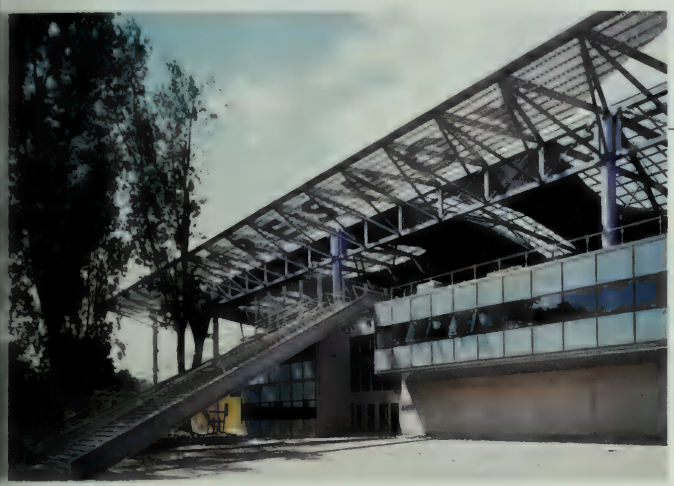
Sources

Low-E insulated skylights: *Viracon*
Aluminum skylight: *Supersky*
Custom wood doors: *Larry Armijo*
Cabinet hardware: *Blum, Accuride*
Paints: *Wellborn*
Files: *Office Specialty*
Recessed track lighting: *Nulux*
Dimming system: *Macro Electronics*
Skylight lighting: *Lithonia Lighting*
Incandescent downlights: *Edison Price, Inc.*
Store cabinet lighting: *Norbert Belfer Lighting*

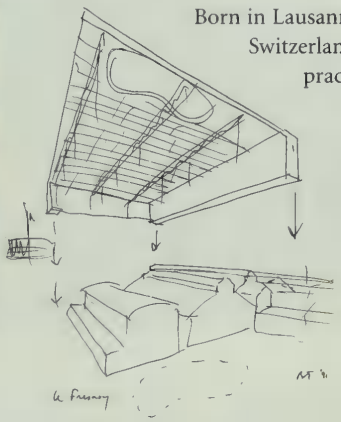


The grand staircase of Le Fresnoy acts as an awning for the ground-floor entrance

Bernard Tschumi's reputation as a paper architect is challenged by his "in-between" building for **LE FRESNOY.**



by Karen D. Stein



Born in Lausanne, Switzerland, and raised in both Switzerland and France, where his father practiced architecture, Tschumi has citizenship in both countries, though he's been a resident of the United States since he moved to New York City in 1976. He's Swiss to the French, American to the Swiss, and—perhaps most significant—European to Americans. For most of his career he's been as much outsider as insider, which makes him exotic in either camp.

The year 1988 marked a turning point for Bernard Tschumi. His most celebrated architectural commission up to that date—the urban plan for the 125-acre Parc de la Villette in Paris—had been dragging on for six years and was in its umpteenth battle with a seemingly endless succession of bureaucrats who were unsure of his red-painted garden "follies." His new work seemed doomed to remain mostly on paper.

Then he was named dean of the Graduate School of Architecture, Planning, and Preservation at Columbia University. A prestigious academic position offered welcome job security and a ready-made laboratory for experimenting with ideas, a draw for any architect and particularly the theory-minded Tschumi. But he quickly discovered, as he did when starting his architectural practice, that there was no fixed job description. "I had no idea what the job of a dean was," recalls Tschumi. "You have to invent the job around you." Discussing the varied demands of the Columbia faculty and student body, Tschumi says, "They're so diverse. If you let all the atoms exist in constant motion, it's a great place. If you let them all congeal into one mass, it's a problem. The skill is to keep the atoms circulating."

Rather than segregate his practice from his academic life over the last decade, Tschumi has allowed the two aspects of his career to influence each other. He has not only mastered the art of mixing at Columbia but has brought his skill as an alchemist to his practice of architecture. Tschumi's ability to be more than one thing—theoretician and practitioner—to more than one group of people has something to do with the peripatetic nature of the profession and something to do with how perceptions of him shift depending on the situation.

Tschumi's professional identity is open to constant interpretation, and so is his architecture, a condition that he exploits in his theories of space. In a recent volume of his work Tschumi writes: "Architecture resembles a masked figure. It cannot easily be unveiled. It is always hiding: behind drawstrings, behind precepts, behind habits, behind technical constraints. Yet it is the very difficulty of uncovering architecture that makes it intensely desirable. This unveiling is part of the pleasure of architecture."

It's a truism that an architect's work is autobiographical. So it comes as no surprise that one of the central preoccupations of Tschumi's recent architecture—and the main theme of Le Fresnoy, the National Studio for Contemporary Arts in Tourcoing, France—is what he's called the "strategy of the in-between." At Le Fresnoy the "in-between" refers to the space where the existing building and Tschumi's insertions meet. It also evokes the overall result of the project: a hybrid between old and new construction.

Project: *Le Fresnoy, National Studio for Contemporary Arts, Tourcoing, France*
Architect: *Bernard Tschumi Architects—Bernard Tschumi, principal-in-charge; Tom Kowalski, Jean-François Erhel, Véronique Descharrières, François Gillet, Mark Haukos, Yannis Aesopos, Henning Ehrhardt, Douglas Gauthier, Vincent Thevenon, Paul Huchard, Robert Young, Jim Sullivan, Eric Liftin, Robert Moric, Sheri Olson, Jordan Parnass, Tsuto Sakamoto, project team*
Engineers: *Tetraserf (structural); Louis Choulet (mechanical)*
Consultant: *Sylvia Kurz (landscape)*



Tschumi came to Le Fresnoy in the same way he's come to the other significant projects of his career: through competition. Winning the commission for La Villette in 1983 put him in the international spotlight as an architect-provocateur. However, a 12-year gestation period for the 25 follies of La Villette (each between 2,000 and 12,000 square feet) took a toll on his reputation as a builder. The public unveiling of Le Fresnoy revived his reputation and helped Tschumi make it to the final round of the competition to design the extension of New York City's Museum of Modern Art last fall. He's a contender again.

"THE BUILDING WAS IN BAD CONDITION," REMEMBERS TSCHUMI, "BUT THE SPACES WERE SO FASCINATING."

"The program is crucial," says Tschumi of Le Fresnoy. Indeed, the idea of the interdisciplinary institution and its three-dimensional realization are now so intertwined it's difficult to unravel the pedagogical mission from the architectural effect.

Located in northern France near the growing megalopolis of Lille, Le Fresnoy is a graduate school for a range of artistic disciplines—cinema, video, visual arts, performing arts—all of which are meant to interact and cross-pollinate. As is typical in France, it's entirely funded by the federal and regional government (in this case, the Ministry of Culture and the Nord Pas de Calais). Tuition is free. Alain Fleischer, Le Fresnoy's director and also a founder, explains, "Our main idea is crossing all the arts, including new technologies. It's more a producing school than a traditional graduate school. Students work with famous artists and choreographers to produce work on a professional scale and with professional means."

When Fleischer and his colleagues were touring the region for possible sites for the school, they fixed on Le Fresnoy, a forlorn group of buildings that in its 1920s heyday had been an entertainment palace complete with the first movie theater in northern France and a wrestling arena, among other features. Designed by its owner, a local contractor, the complex was a marvel of open-span industrial space and remained so even in its dilapidated state. "The project really started when we were given this place," says Fleischer of its catalytic role.

While the competition brief mentioned the importance of the existing buildings, most of the entrants ignored them. "Keeping the old buildings was our wish," recalls Fleischer of the jury's sentiments. "Many of the architects ignored this. Others pretended to keep the old buildings. But Tschumi was the only one to really do it."

Tschumi remembers the assignment's emphasis differently, a discrepancy due, perhaps, to the surprisingly pleasant impact of the spaces themselves. "In the competition requirements, we were encouraged to demolish everything. Then I came to France and saw the spaces and I felt a reticence to do so. I knew that at $100 per square foot [the proposed budget], I couldn't build spaces like that." For Tschumi, who sees himself as testing architecture's limits, finding himself pleading for "preservation" was indeed sobering. "The building was in bad condition, *(text continues)*

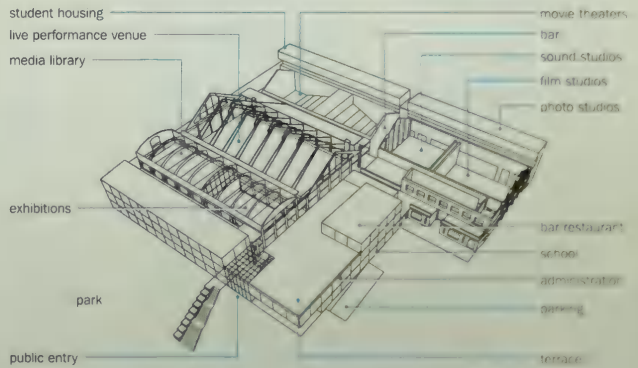




A canal and highway run along the north side of Le Fresnoy (left, top and bottom). The existing buildings (right) were given a fresh coat of yellow paint (above and opposite).







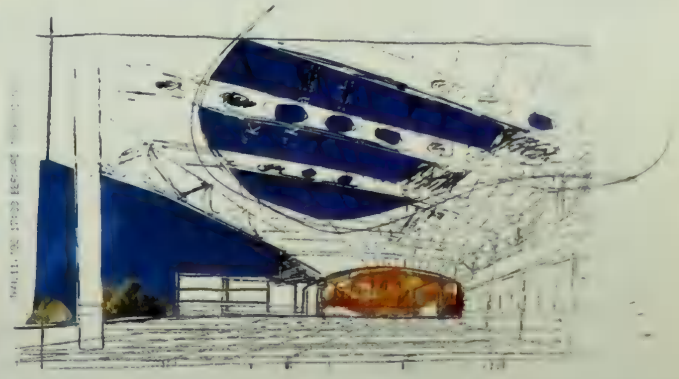


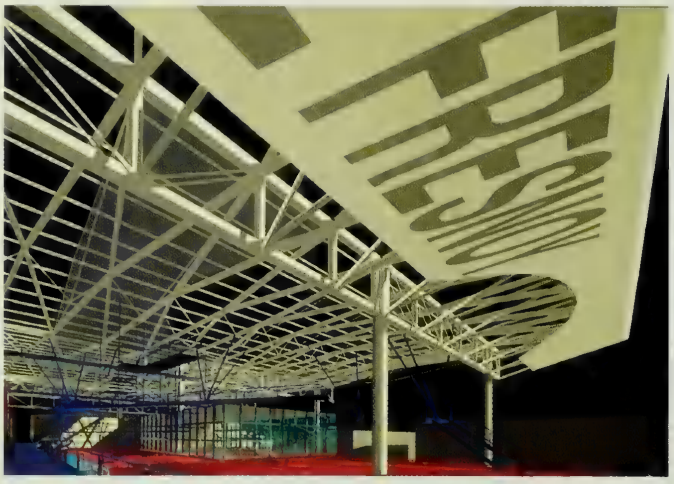


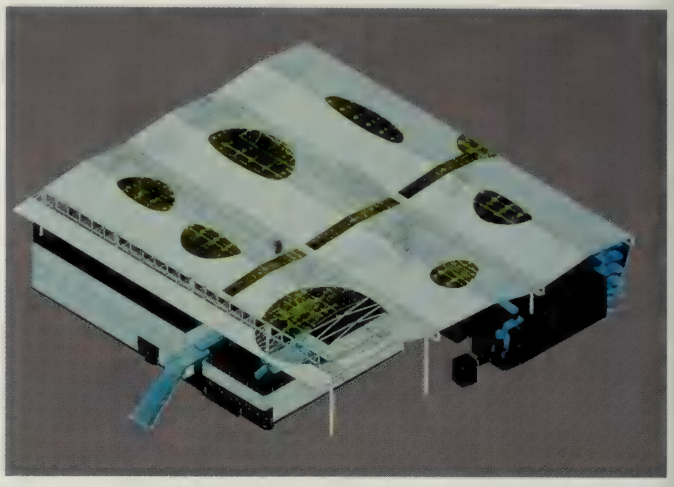


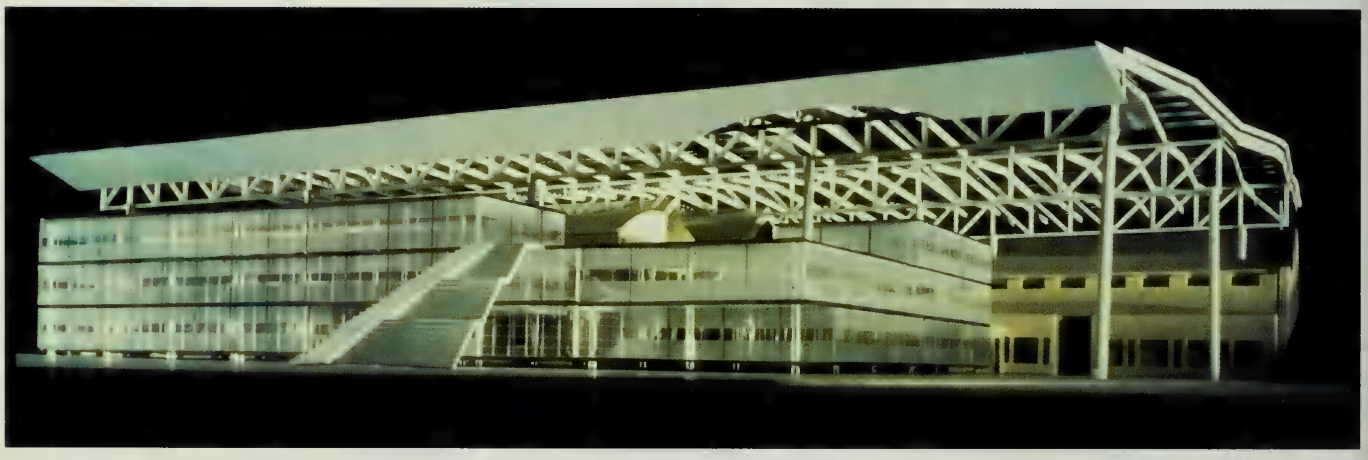
The grand exhibition hall (left and below) was once a roller rink complete with mezzanine. Inside the space, Tschumi added a second-floor library, reaffirming his box-within-a-box strategy. Wood planks have been inserted between the trusses of the second grand hall (above) to improve acoustics for live performances. New ducts and lighting are hung from the roof.











but the spaces were so fascinating," explains Tschumi. "I thought at the time, 'It's crazy to demolish this,' and I'm not a conservationist."

Between the first design phase of the competition in October 1991 (with six competitors) and the second phase in February 1992 (with only two teams remaining) Tschumi met with the client group every two weeks to dissect the program. The design developed very quickly, Tschumi says, and by the spring of 1992 the project was officially his. He expanded the team working on the project in his Paris and New York offices, incorporating former Columbia students into his Manhattan studio for marathon sessions of program discussion—workshop critiques of ideas and theories about the project—and model building and computer analysis. Sorting out the mandates of the local and regional planning office regarding permissible building height for a public facility delayed the start of construction until April 1994. A maximum height of 67 feet was eventually agreed on.

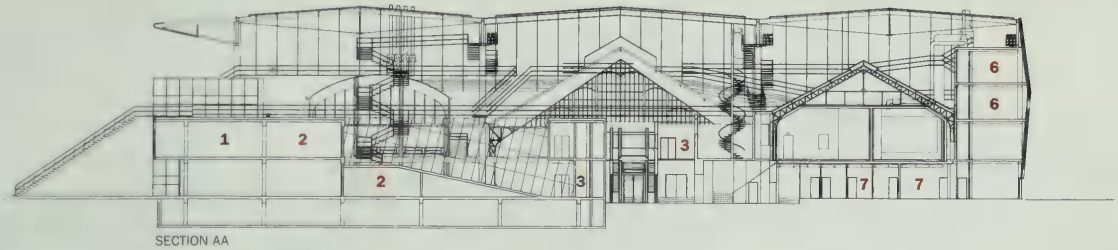
TSCHUMI'S "IN-BETWEEN" IS EXPRESSED BY A WEB OF BLUE-PAINTED STEEL CATWALKS.

The overall concept is simple. "My first reaction [to the complex] was 'Let's put a big umbrella over it to keep the rain out and avoid dealing with the snow,' since the engineers said snow loads were going to be a big problem," says Tschumi. So was born the "in-between." Tschumi's umbrella became a 295-by-304-foot steel roof 64 feet high at its peak. All the HVAC equipment and staging mechanics are hung from the roof, puncturing the tiled roofs of the existing buildings as necessary. The spaces beneath have been salvaged and reworked, depending on the needs of the program—in all some 53,500 square feet of existing space were retained and 84,300 square feet of new space were built; 24,000 square feet were demolished. One grand hall, originally a roller rink, now serves as exhibition space, with a media library tucked in its back half as a box within a box. The second grand hall is for live performances. Wood planks backed with sound-absorbent material were inserted between steel trusses to improve the space's acoustics.

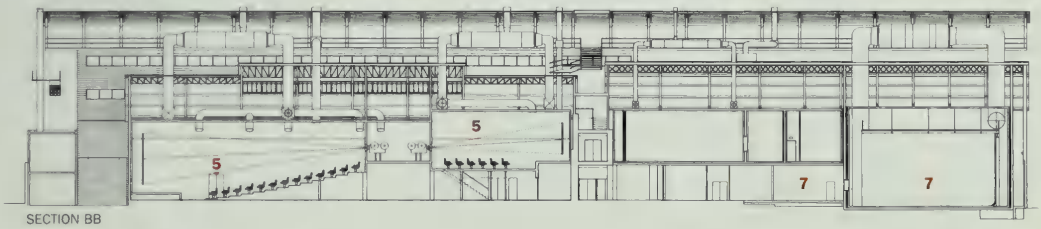
A rotted structure on the north part of the complex was demolished to make room for production studios and a block of artist-in-residence and student housing. Additions were boldly rendered to distinguish them from existing pieces. A glass wall near the entrance has giant mullions set at an angle to signal its newness. A curtain wall on the south facade was made as sleekly modern as possible by removing mullions from an off-the-shelf system. The "in-between" is expressed by a web of blue-painted catwalks that wind their way below the giant roof, functionally interconnecting the various venues. Semi-elliptical windows in the corrugated-steel roof admit daylight, giving the upper levels of the complex the feeling of a city within a city. The ramps and stairs permit views into the various spaces below and out over the motley brick landscape of Tourcoing, once a textile-production center.

The giant roof presented technical challenges, but they were nothing compared to the delays caused by contractors, the choice of

Computer drawings were used as study tools. The name of the project was incorporated into the roof's overhang by using contrasting layers of metal grating (opposite, top left). Program spaces are layered on top of and adjacent to one another (sections right and plan below). The bar of student housing occupies the north end of the complex, where a rotted 1920s structure was demolished. The giant roof screens the terrace of the café.



SECTION AA



SECTION BB

1. *Administration*
2. *Exhibition space*
3. *Live performance venue*
4. *Media library*
5. *Movie theater*
6. *Housing for students and artists-in-residence*
7. *Studios*



UPPER FLOOR

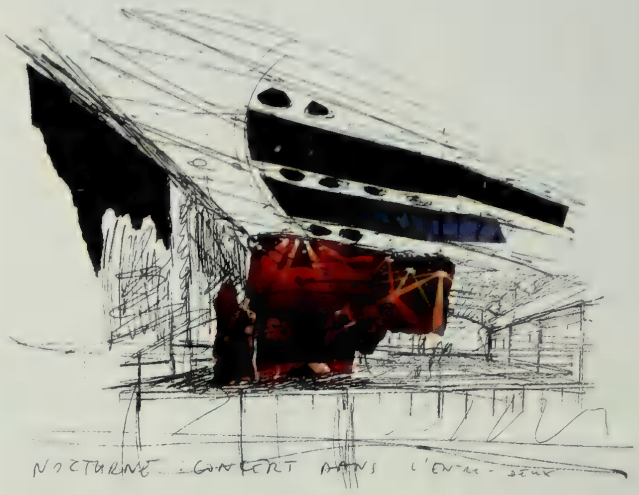
whom was dictated in part by regional politics. The contractor in charge of producing shop drawings for the roof was doing an excellent job, according to Tschumi, until he was jailed for political corruption. One of the subcontractors, a painter, held up delivery of the entrance's grand staircase for months because of a dispute with a steel contractor; the painter was then murdered by his wife, reports Tschumi, and the stair was delivered days later. When the building opened in November, HVAC work remained unfinished because the subcontractor in charge had gone bankrupt.

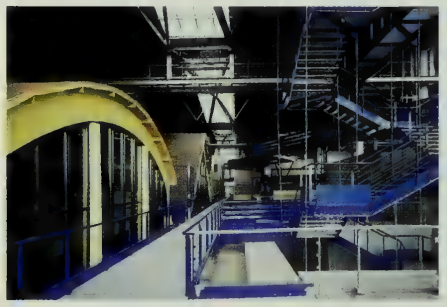
While the human drama of the various contractors delayed completion and increased costs—not to mention personal anguish—it is now part of the lore of this former amusement palace. Resuscitating an old building while creating a new one proved to be the biggest drama ever staged in this venue. Says school director Fleischer of the outcome: "There's a strong relation between old and new. The new is protecting the old. When you look at the building, you see the past and the future, the finishing of this century and the beginning of a new one. The old building is for exhibition and the new one is for production."

For Tschumi, the project is, as always, about keeping atoms in motion. "I believe in creating certain conditions that will result in something unexpected," he says, admiring the view of his reconstituted Le Fresnoy from an upper catwalk. "These are spatial effects that you can't design. They happen because you set up certain conditions." ■

Sources

Corrugated metal: *Framatec*
Steel: *Reynolds Batiments*
Glued glass, glass panels: *Cekal (PolyGlass D)*
Metal doors: *Gubri*
Sliding doors: *Sobanor*
Wood doors: *Van Henis*
Locksets: *D-Line*
Acoustical paneling: *Tectum, Inc.*
Gauloise blue enamel on walkways: *La Seigneure*
Carpet: *Flotex*
Elevators: *Kone*





A curtain wall designed by Tschumi has thick, tilted mullions to signal its newness (opposite). Blue-painted walkways and stairs fill the "in-between" (left and below).







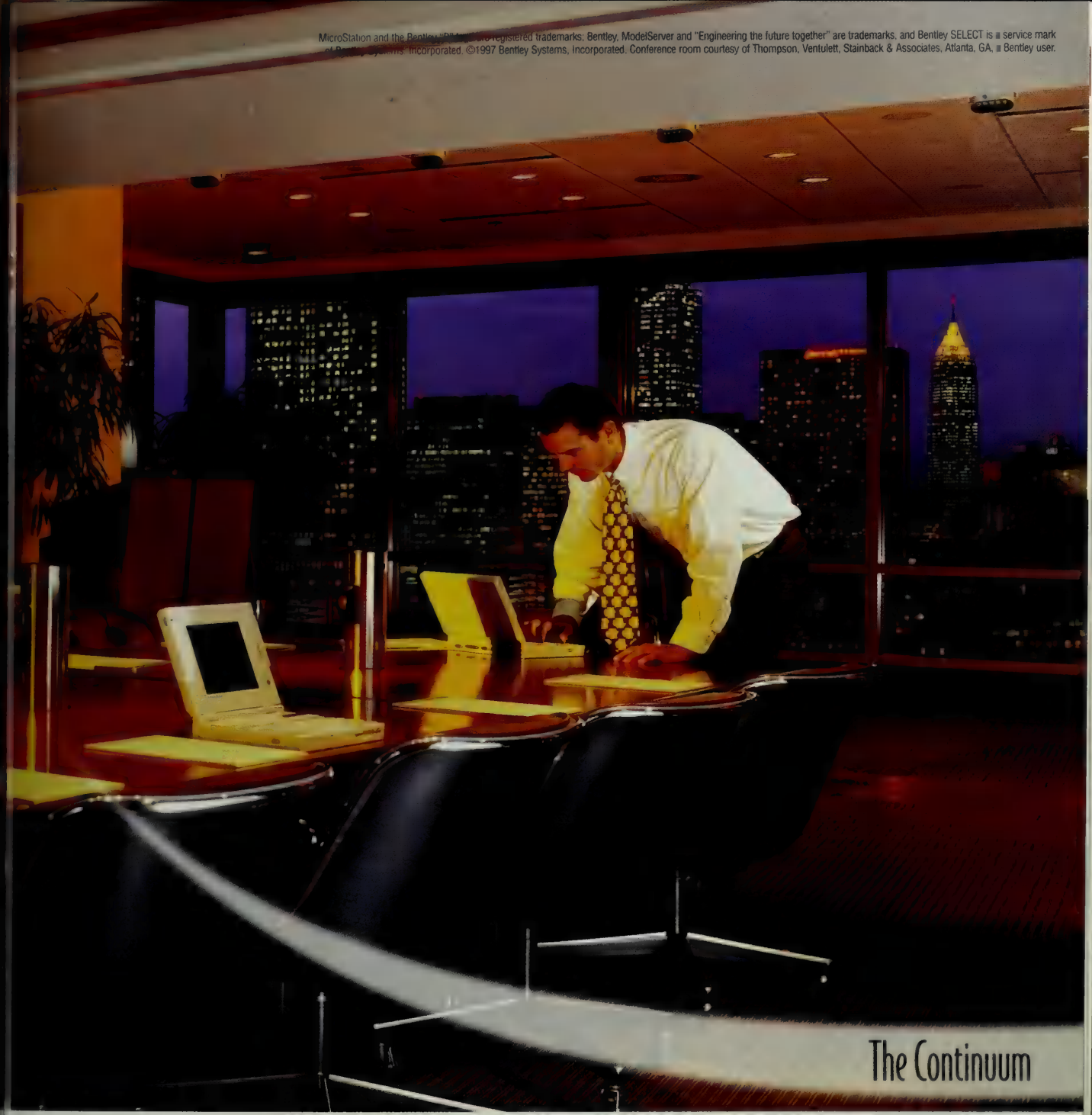
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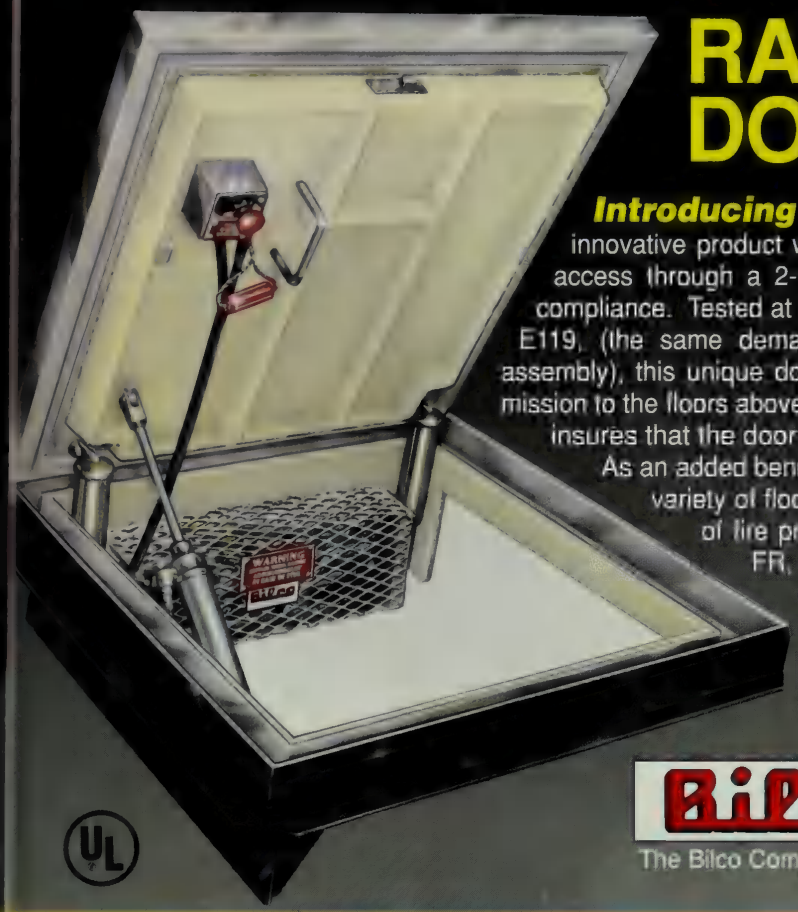
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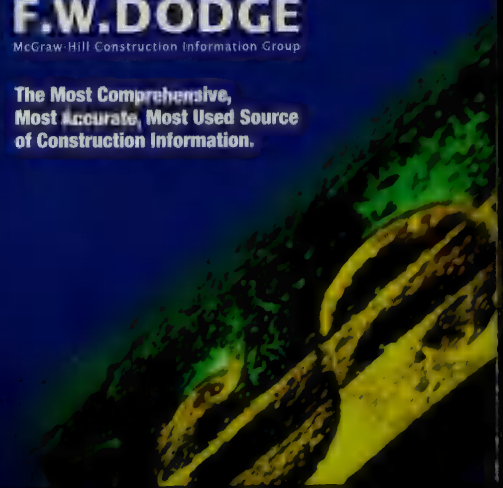
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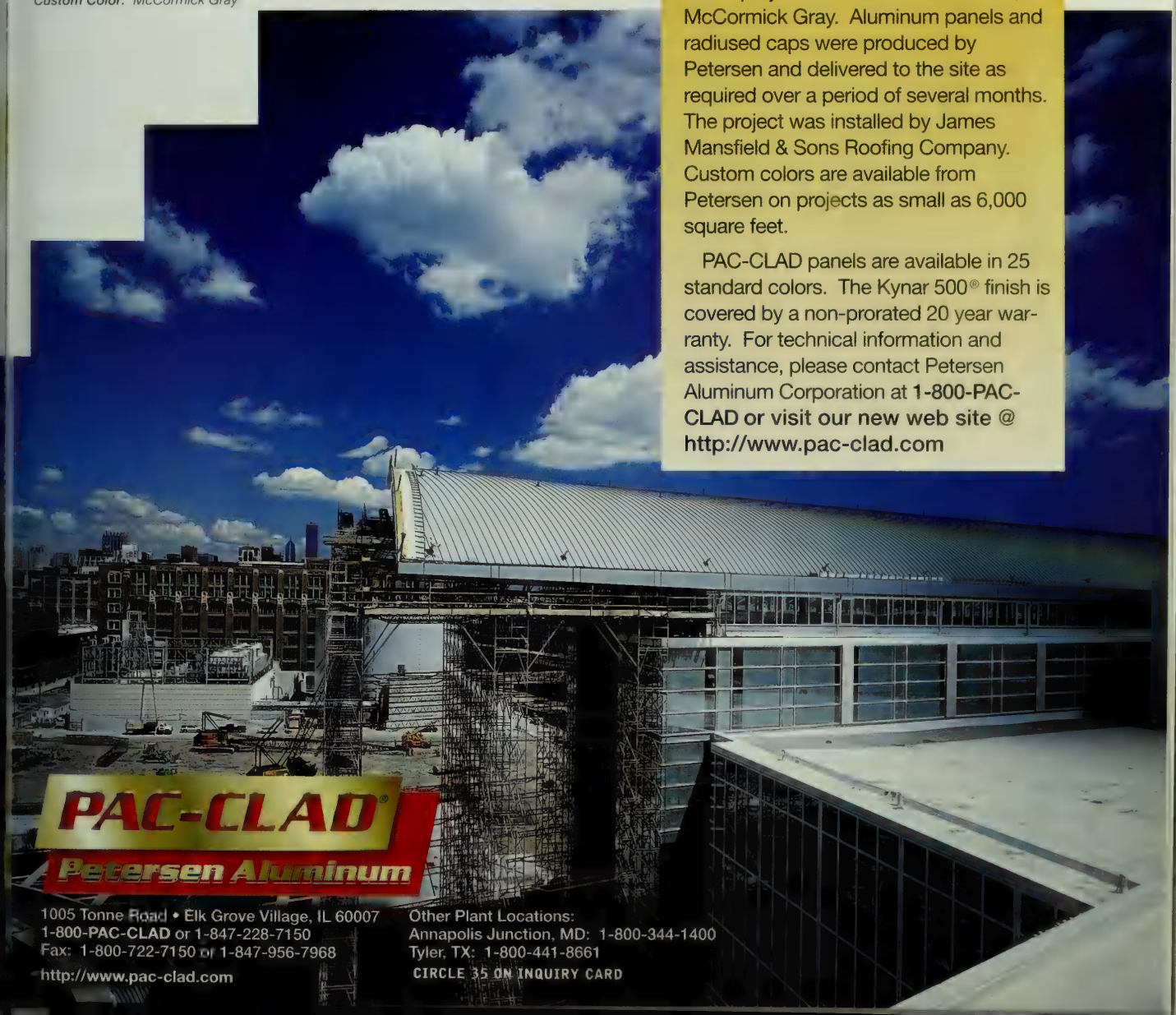
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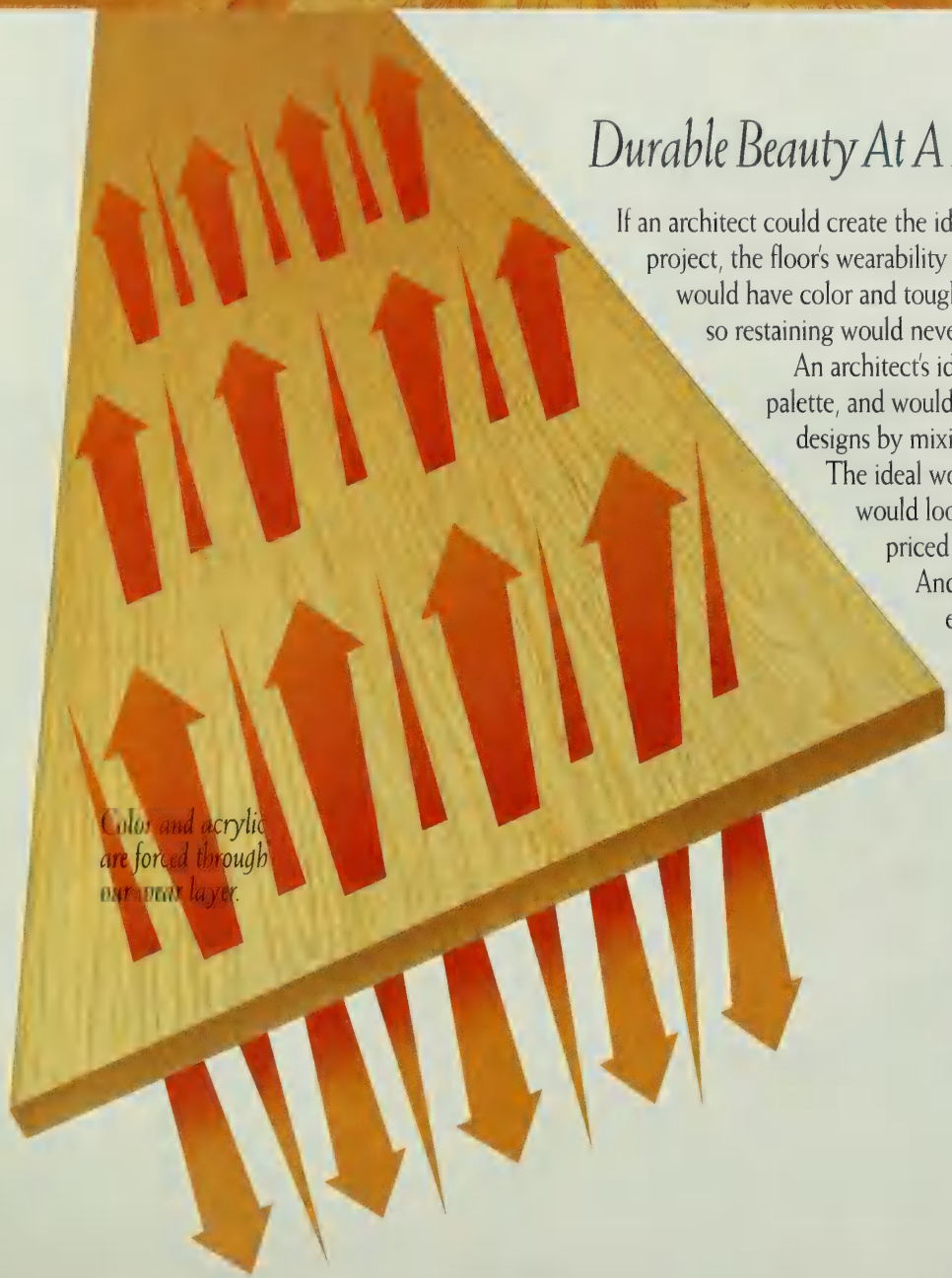
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SENIOR HOUSING

A Quiet Revolution

MARKET-DRIVEN FORMULAS AND TIGHT COSTS HAVE LED TO LOOK-ALIKE DESIGNS, BUT NEW RESEARCH ON THE NEEDS OF THE ELDERLY CAN INSPIRE INNOVATION.

by Sheri Olson, AIA



1

Pittsburgh, Pennsylvania

A nonprofit sponsor offers a range of social opportunities in a project attached to a community center.



2

Holland

Do the Dutch do it better? Holland and Scandinavia have traditionally been innovative in humane housing of the elderly, pioneering the trend toward more diverse solutions such as congregate care and assisted living. But the country's population is rapidly aging, creating new challenges in financing both housing and health care for the elderly. Three projects show that innovation hasn't waned, but it operates within tighter constraints.





3

Brookline, Massachusetts

CBT works with residential massing to fit a large project with a complex program into a built-up residential neighborhood.

Construction of housing for senior citizens is booming, and the variety of building types is proliferating. But the market is sending mixed messages to architects: while progress in geriatric care offers the elderly more independence later in life—creating opportunities for design innovation in facilities for the aged—managed care and Medicare are putting the brakes on costs. The potential for growth and profit has sent capital flowing into this market, but lenders' aversion to risk has encouraged cookie-cutter design.

Then there are the senior citizens themselves, who are demanding facilities more humane than the nursing homes they felt forced to place their parents in. (Thirty percent of Americans would rather die than live in a nursing home, according to a recent survey in the *Journal of the American Geriatrics Society*.) The picture of old men and women warehoused in bleakly institutional nursing homes with dark, dreary corridors, little privacy, and unpleasant sounds and smells is being swept away by several trends: explosive growth in the number of people over 85, an influx of investment capital, and the revamping of the health care industry. The anti-institutional backlash means that nearly all senior housing built today resembles overscale Victorian houses, cushy clubs, or anonymous hotels.

High growth in the number of very old

For architects who can make sense of the ambiguities and contradictions of the senior housing market, however, there is opportunity. The fastest-growing segment of the United States' population is people 85 and older, and their ranks are expected to quadruple by 2050. In real terms they will still make up less than 5 percent of the population; but the numbers remain impressive, with an anticipated increase from 5 million people over 85 in the year 2000 to almost 20 million by 2050.

People retiring between 1994 and 2015, dubbed the Silent Generation, are wealthier, healthier, and living longer than the World War II–era generation before them. They are also exacting consumers. "They clip coupons but buy Cadillacs," explains Sharon Brooks, of Sharon Brooks & Associates Advertising in Richmond, Virginia. According to focus groups she has coordinated, the new retirees want housing that is downsized but upscale. (Dining space to accommodate family gatherings and a guest room for visiting grandchildren are important, as is home-

Sheri Olson, AIA, is an architect and writer based in Seattle.



1. *Pantry*
2. *Library*
3. *Great room*
4. *Other activities*



At Woodside Place, a pioneering project designed by Perkins Eastman and based on research on Alzheimer's patients, Dutch doors prevent residents from wandering into each other's rooms. Picture rails holding mementos and old photos jog faltering memories.

office space. They expect privacy yet also want to be part of a community as they increasingly engage in volunteer activities and return to school.

Not all senior citizens are created equal. "The first mistake many people make is to treat those over 65 as a monolithic group," says Paul Klaassen, CEO of Sunrise Assisted Living in Fairfax, Virginia. The biggest differences arise during the aging process. "The needs of a 65-year-old are vastly different from those of someone 85," says Victor Regnier, professor of architecture and gerontology at the University of Southern California. Senior citizens between 65 and 75 are still active and generally healthy, while those between 75 and 85 may require anything from minimal assistance to full-time skilled nursing.

To accommodate this diversity, care and housing choices are becoming increasingly specialized. "In the past, a nursing home was the only choice; now a full spectrum of care is available," says Mark Schulte, CEO of Brookdale Living Communities in Chicago, though categories blur from place to place. "Independent-living" projects most resemble conventional condo communities, but they may target specialized facilities or amenities at younger and still ambulatory residents. "Congregate-care" residents have their own apartments but may take one or more meals in a group setting and receive other daily help. "Assisted living" is for the frailer elderly who want a homelike setting where they receive meals, subacute medical care, and help with such everyday tasks as bathing and grooming. Specialized facilities are required for the ambulatory elderly facing Alzheimer's disease or dementia. Continuing-care retirement communities (CCRCs) bring together independent living, assisted living, and a skilled-nursing facility on a single campus. CCRC residents typically pay an entrance fee as well as monthly fees, receiving future increases in care with little or no additional charges.

Currently, assisted living is the hottest senior housing market, estimated to reach $33.1 billion in revenues by 2000 with nearly 4.1 million beds. According to David Schless, executive director of the American Seniors Housing Association (ASHA), 68 percent of new construction is assisted living, 18 percent is congregate care, and 8 percent is in CCRCs.

The popular perception that Snowbelt seniors flee to the Sunbelt upon retirement obscures the reality that only 5 percent actually move away from their community. Most projects attract residents from within a six- to seven-mile radius. ASHA's 1997 construction survey shows Texas leading in the number of projects being built, followed by California, Florida, Arizona, North Carolina, Pennsylvania, Michigan, Tennessee, New York, New Jersey, and Oregon. Together these 11 states account for more than half of all senior housing under construction.

Increased investor interest

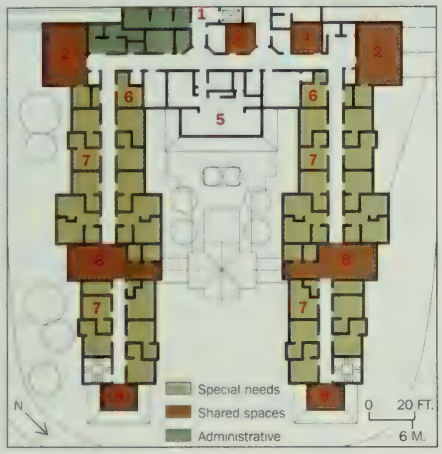
Growth in this sector has also come about because investors see profit potential. "In the past 24 months there has been a tremendous increase in the money available to develop senior housing," says Schless. A large part of this new capital comes from Real Estate Investment Trusts (REITs) seeking to diversify their portfolios. "A few years ago the 14 health care REIT portfolios had only 2 to 3 percent of their holdings in long-term care or assisted living; today eight of them have 25 percent," explains Schless.

Wall Street and bonds are also sources of funds, but the majority of financing is from more conventional sources such as banks. Retirement housing has a number of inherent risks, however, and lenders are increasingly involved in decision making as a means to reduce them. "We're currently working on a project managed by [banking firm] Herbert J. Sims & Company in conjunction with Smith Barney, and the lender's representative comes to all of the team meetings," says Brooks.

The entry of hospitality groups like Marriott and Hyatt into long-term care in the mid-'80s legitimized the industry for many investors. "Previously, senior housing with personal-care services was seen primarily as a health care or hospital environment," observes USC's Regnier. "But lodging chains recognized that there was a problem with what was being built, and that there was profit to be made by creating



In Sykesville, Maryland, Copper Ridge, another project for Alzheimer's patients by Perkins Eastman, divides small clusters of skilled-nursing beds with common rooms.



1. *Hall to entrance*
2. *Dining*
3. *Activity*
4. *Barber/beauty*
5. *Physical therapy*
6. *Tub/shower*
7. *Resident rooms*
8. *Living room*
9. *Den*
10. *Sitting area*
11. *Garden room*
12. *Secure courtyard*

more residential environments." These for-profit companies also gave a wake-up call to nonprofit groups that have tended to stress social service—presuming residents' need for aid rather than encouraging independence. "By bringing their emphasis on customer service to senior housing, the hospitality groups placed the consumer in control," adds Regnier. They also changed the look of retirement housing. "Hyatt in particular put a spin on design, making projects more residential in character," says James Culpepper, principal of Culpepper McAuliffe Meaders in Atlanta.

Nonprofit groups—primarily churches and synagogues—continue to be major players in the development of senior housing, and although they may build fewer projects than for-profit developers, they are not necessarily smaller. Not surprisingly, nonprofits place a greater emphasis on the emotional well-being of the elderly, having introduced an array of social spaces into projects early on. "These agencies are concerned with the spiritual, not just the physical, component of aging," says Julie Snow, AIA, Minnesota. Her firm is currently working on a large new elder-care training facility for the Evangelical Lutheran Good Samaritan Society in Sioux Falls, South Dakota.

Where the architect fits in

Fees in this market tend to be low (often on the order of 3 to 8 percent, depending on project size and the complexity of regulations), as do construction budgets (comparable to local residential-construction norms), encouraging adaptation of existing building types rather than innovation.

Klaassen, of Sunrise, found that some architects' preconceived notions about care of the elderly interfere with his efforts to respond to the market. "You have a 40-year-old male architect designing for an 85-year-old woman," claims Klaassen. "What you get is an overly romanticized version of an elderly person's needs." He works with an architecture firm that produces construction documents of designs he often draws himself. "I usually spend three to four hours a week drafting floor plans and elevations to get the look I want," says Klaassen.

More typical are the companies with staff architects who develop prototypical designs and oversee local architects hired to adapt them to specific sites. "A lot of the large developers of assisted-living projects have in-house architects, and senior housing is all they do. It's the cookie-cutter approach," says Mark Simpson, AIA, a principal of Bumgardner Architects in Seattle. His firm finds that nonprofit groups are more likely to seek full professional services since they typically build only one project. Some large developers come to design firms to enhance the quality of their projects. "We hire outside architects because we're looking for a higher level of design than what you might get with in-house staff," says Mark Schulte. "To avoid the steep learning curve, we tend to work with firms that we have developed a relationship with or that have experience with the project type."

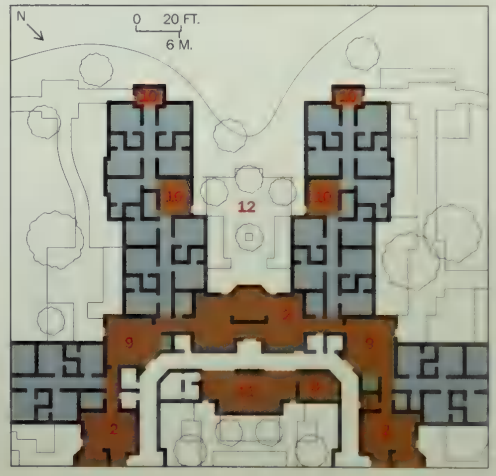
Design based on market research

Many architects are put off by the uniform appearance of typical senior housing projects: the style range seems to encompass little more than Victorian mansion and Shingle Style bungalow. Senior housing in countries like Holland, Denmark, and Sweden seems to be more socially innovative and visually exciting than what is built in the United States (pages 112–13). Some observers blame American building codes for the banality of the work here, but this doesn't explain the heavily nostalgic design of most assisted-living projects, which don't fall under the strict regulations nursing homes do.

"Codes are a favorite whipping boy," says Regnier, "but the difference [between projects in the United States and Europe] is more likely attributable to a stronger tradition of modern design in multifamily housing in those countries than has ever existed here." REITs as well as traditional lenders also tend to prefer the tried and true. "Innovation is expensive, and this is a cost-driven industry," remarks Andrew Bank of CareMatrix, New York, developers and operators of senior housing. "It's a luxury unless it's driven by necessity."

Also, say developers, extensive market research shows that conservative designs appeal to prospective residents. "People are basing major life decisions on the way these environments appear," says Regnier. The message marketers are receiving is that 80-year-olds—and their adult children, who are usually involved in housing decisions—want something comfortable and familiar. "Does this mean that we all have to spend the end of our lives in an old-fashioned-style building?" asks Maury Childs,

The assisted-living wing at Copper Ridge broke new ground by offering a wide variety of social opportunities, such as a garden room, a kitchen that can be used by residents, and a safe, outdoor "wandering" garden. The style is residential, not institutional.





The Hallmark, in Chicago, draws affluent congregate-care residents who want to be close to downtown amenities or don't want to move far from home. Other projects cater to a mix of needs within a single high-rise.

FAIA, principal with CBT/Childs Bertman Tseckares, Boston. "I hope not, but the pressures on architects to comply are tremendous." Some of this pressure comes from people concerned about an institution moving to their neighborhood. "Developers feel that they need to be able to stand up at a community meeting and say, 'This looks just like your house'—even if it's an uninspired neocolonial," adds Childs.

Is there room for design innovation in an industry driven by cost and the market? It depends on how you define innovation, say architects in the field. James Culpepper believes creativity is essential to imaginatively resolve the complex issues he is presented with daily when designing for Hyatt. The area where both developers and residents appear to be most receptive to bold ideas is inventive programming. "In one project we developed a business center where residents can get on the Internet to check stocks or to E-mail a friend in Africa," says Culpepper. Architects are reinterpreting trends in the world at large—like the popularity of bookstore cafés—and introducing them into retirement housing. Such elements improve "curb appeal" but also enhance residents' quality of life.

And there are indications that consumers may tire of cloying designs. "Some seniors are asking, 'Do I have to live with cute all the time?'" says David Hoglund. As their numbers increase, there may be a larger market for more diverse design. "I'm sure there are seniors who would go for a Frank Gehry project as long as it didn't compromise function or impede independence," says Daniel Cinelli, director of life environments at O'Donnell Wicklund Pigozzi and Peterson Architects in Chicago. In an attempt to define a market niche, some developers may be willing to push the design envelope. "CBT is currently working with a start-up company that wants to stand out from the competition by doing something fresh," explains Childs.

Changes in care and in reimbursement drive innovation

Because stock solutions don't remain appropriate for long in this fast-moving market, there are ample opportunities for those who can recognize the next trend. Many elderly people are able to remain in their own homes longer than they might have in another time, say experts, so senior housing is attracting an older and frailer market. Currently, the average new resident is a woman in her late 70s or early 80s.

Senior citizens who would have been placed in nursing homes in the past are now going into assisted living. Usually greater independence is beneficial. Assisted living is also less expensive: $71 per day per bed versus $110 for a private room in a skilled-nursing facility. "You really don't need someone with a medical degree to change a shirt," says Simpson.

"There's been a shift away from 100 to 200 units—which is more institutional—toward 60 to 85 units, which allows for more cluster housing," says Childs. Although smaller, these buildings are still 50,000 to 60,000 square feet, a difficult fit in any residential neighborhood. "We're always fighting with the scale, trying to disguise how big they are," says David Hoglund. This is one reason why Klaassen prefers Victorian-style architecture for the projects he develops. "It's familiar and, unlike some styles, still looks residential as it gets larger." But Hoglund believes a literal translation is not necessary: "We try to recall proportions and scale while relating to the context." His projects have won several AIA/American Association of Housing for the Aging awards.

The most dramatic advances in senior housing design are for elderly people with Alzheimer's or other forms of dementia. Instead of being tied to wheelchairs or heavily medicated, these residents can now safely move about within assisted-living environments tailored to meet the challenges of their disease. Hoglund worked with specialists from SeniorCare, a nonprofit group, to develop Woodside Place outside Pittsburgh, a ground-breaking project in long-term care. In addition to smaller-scale units with residential finishes, the project demonstrates the importance of a homelike environment in alleviating residents' anxieties. "Lessons learned from Alzheimer's patients have trickled down to all types of senior housing," says Cinelli. His firm applies "therapeutic wayfinding"—relying on themes (in one scheme, a piano and framed sheet music) rather than labels or colors—to help residents recall where they are.

New luxury high-rise senior housing

Manhattan will soon see its first luxury housing designed specifically for the elderly, part of a growing trend of retirement housing in urban areas. Many elderly people want to remain close to cities to be near cultural attractions and their adult children. Typically these projects are built in large urban areas—places that have a surrounding critical mass of affluent suburbs from which to draw residents. Since this building type is more complex and expensive than the typical outer-suburb development (units may rent for $3,000 a month, with an additional $1,500 to cover meals and housekeeping), it attracts only the most experienced developers. According to Jon McMillan, an urban designer with senior housing developers Landmark America in Portland, Maine, many urban high-rise projects are similar to the 200-plus-unit, 14-story project slated for Battery Park City in Manhattan. It will be about 70 percent independent living and 30 percent assisted living. "Seniors like the idea that the next level of care is available," says McMillan, "but most people don't want to see someone worse off than themselves."

Age segregation versus integration

In the suburbs, merchant builders are beginning to incorporate units specifically for the elderly into larger developments. "This is one of the



Low land costs in outer suburban areas appeal to developers of both independent-living and assisted-living projects, such as the Devonshire, built by Brookdale Living Communities in Lisle, Illinois, west of Chicago. The 321-unit project was designed by BCA Architects and built on 14 acres.

most fascinating developments in senior housing," says Sharon Brooks. "We've come full circle, from taking seniors out of the community to incorporating them back into it." Bumgardner Architects is currently working on a 3,000-acre project in Utah that sites higher-density independent living on smaller lots clustered around parks—not just the retirement-community-standard golf course. "It's the defensible space idea," explains Mark Simpson. "Since the elderly are more likely to be home during the day, we thought they might help keep an eye on what's happening in the park."

Still, some retirees prefer a gated community and the ability to go to the pool without being splashed by children. Most CCRCs today are less elaborate than the Del Webb–type retirement communities such as Sun City that focus only on active adults. Few new CCRCs are built because they are large (typically with a budget of $50 to $70 million per project) and the financing model (buyers turn over a great deal of money up front in return for having all their medical needs covered) is complex and losing favor.

In a new twist on senior housing, some universities are developing CCRCs for alumni and faculty. Residents can audit classes, use campus libraries and sports facilities, or even play in the school band. "It's a more sustainable form of retirement than just playing golf," says Cinelli, whose firm designed the Pines, a retirement community developed for Davidson College in South Carolina.

The biggest challenge: serving the underserved

In most large metropolitan areas, the market-rate spectrum of residents in senior housing doesn't reach much below a $50,000 annual income. And many of the 1.6 million senior citizens currently in nursing homes live in miserable surroundings. "Little attention is being paid to the middle-income level," says Landmark America's McMillan. "At some point, the government may have to step in to help." While his company has developed some senior housing utilizing tax subsidies aimed at low-income housing, not surprisingly most companies primarily target the affluent elderly.

With the rise of managed care and lower Medicare reimbursements restricting the options of the lower- and middle-income aged, the burden increasingly falls on their children. "Currently, the majority of seniors receive care from family—sons, daughters, daughters-in-law," explains ASHA's Schless. With limited incomes and too little time, many in this "sandwich generation" find the demands crushing [see also "Balancing the Equation," RECORD, March 1996, pages 24–27]. Using Medicare or Social Security to underwrite assisted living for a broad swath of middle- and lower-income elderly would be costly and does not currently appear to have enough of a political constituency.

Regnier's book, *Assisted Living Housing for the Elderly: Design Innovations from the United States and Europe* (New York: Van Nostrand Reinhold, 1994), includes an examination of Sweden's system of "service houses" that lighten the load on adult children by providing noontime meals, health care, and physical and occupational therapy. Some American developments offer adult day care, but they are often not financially viable in low-density, car-dependent areas. Still, some states are beginning to shift Medicare funds to home- and community-based services, though at $83 per day for an average in-home visit and $30 per day for adult day care, these, too, can stretch government budgets.

On the other hand, pension-law changes, as well as Medicare and Social Security improvements, have meant that fewer older people than ever are poor. In general, they are living longer and are healthier. As the baby boomers age, the political consensus that has made this level of senior welfare possible is likely only to strengthen. ■



The Bumgardner Architects terraced curving streets into a sloping site to make on-grade access possible in back-to-back units at Providence Point, an independent-living community in Issaquah, Washington.

1 Weinberg Terrace Pittsburgh, Pennsylvania

AN UPSCALE HOME FOR THE ELDERLY IS PART OF A LARGER EFFORT TO PRESERVE AND STRENGTHEN ONE CITY'S JEWISH COMMUNITY.

by Charles Linn, AIA

Project: *Weinberg Terrace, Pittsburgh, Pennsylvania*
Owner: *Jewish Association on Aging*
Architects: *Perkins Eastman Architects—Bradford Perkins, resource principal; J. David Hoglund, principal-in-charge; David Hance, project architect; Kurt Jorgensen, Cornell Allen, Rick Yestadt*
Architect of base building: *UDA Architects—Don Carter, Paul Ostergaard, Peter Kreuthemeier*
Interior Designer: *Perkins Eastman Architects—Susan DiMotta, Polly Stone*
Engineers: *Structural Engineering Corporation of Pittsburgh (structural); Dodson Engineering (mechanical); Caplan Engineering (electrical)*
Consultants: *LaQuatra Bonci (landscape); Gerontological Services (marketing)*
General Contractor: *NADCO Construction*

Project Statistics
Gross area: *62,500 sq ft*
Net rentable area: *29,700 sq ft*
Number of units: *9 studio, 44 one-bedroom, 9 one-bedroom deluxe*

Weinberg Terrace is located in Squirrel Hill, a predominately Jewish neighborhood in Pittsburgh. "What's interesting about Squirrel Hill," says architect Dave Hoglund of Perkins Eastman Architects, "is that it became the center of the Jewish community at the turn of the century and still is today." Many Jewish areas—as well as other ethnic neighborhoods—disappeared as people fled to the suburbs from the inner city after World War II.

Realizing that this enduring neighborhood was indeed a treasure, in 1994 Pittsburgh's Jewish leaders launched a fund-raising drive called the Renaissance Campaign to preserve and strengthen Squirrel Hill's Jewish community. This highly successful drive raised $50 million, which was used to build day schools and facilities for the aging, to expand the Jewish Community Center, and to support cultural programs.

One result of the Renaissance Campaign was Weinberg Terrace, an assisted-living facility located in the same building as the offices for a Jewish family services organization and an annex to the original Jewish Community Center, which is across the street.

Closeness benefits community

Weinberg Terrace's prime spot in a vibrant area is a refreshing change from the typical sites of homes for the elderly: large, inexpensive tracts on the outskirts of town or in suburban areas. According to Hoglund, building on smaller lots in residential neighborhoods is the current trend for such projects, since it fosters a positive connection between the inhabitants and the community.

Weinberg Terrace subscribes to the notion that keeping the elderly engaged with their surroundings benefits everyone. Since it is located in a mixed commercial and residential district, residents have ready access to services of all kinds, can live near their families, and can participate in many aspects of Jewish life, given their proximity to the new community center. Weinberg Terrace dwellers can visit the center—which has a gymnasium, an auditorium, and a Holocaust museum—without leaving their building.

Hoglund is quick to point out that while "integrating" older and younger people in the same facilities can be positive, no one is forced to mix. Weinberg Terrace and the Jewish Community Center annex have different entrances so that Weinberg's residents can maintain a sense of security and privacy.

Keeping up appearances

Although designing assisted-living facilities in a nostalgic style is another industry trend, the Tudor-style Weinberg Terrace stands among homes of a similar character. "The only difference," notes Hoglund, "is that the houses across the street are 4,000 to 5,000 square feet and Weinberg Terrace is 60,000." To break up the mass of the building, double-gabled ends terminate each of the wings, and the fourth story of the building is tucked under dormers. Hoglund notes that the firm would have preferred to build fewer but larger floors for staffing reasons, but Weinberg's small site made additional stories necessary.

The facility's first floor is devoted to public spaces—a large lobby, an outdoor courtyard, small and large dining rooms—and service areas such as the kitchen, storage space, and a laundry room. The small dining room can be reserved for special occasions. Several rooms are taken up by the Weinberg Club, an adult day-care program that offers activities and hot meals.

Weinberg Terrace's interiors are meant to give it the look of a residential hotel. Although the furnishings and finishes look as if they came from an upscale hotel, they are not unusual in today's marketplace, Hoglund says. "Most of the assisted-living facilities being built now are aimed at unsubsidized, higher-income people."

The residential stories of Weinberg Terrace each hold three

PHOTOGRAPHY: © PERKINS EASTMAN ARCHITECTS (OPPOSITE, TOP RIGHT); PAUL ROCHELEAU (OPPOSITE, LEFT); LOCKWOOD HICKS



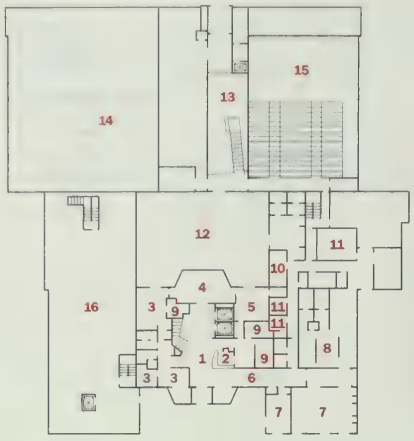
Weinberg Terrace's double-gabled wings (below left) help break up the scale of the building. As if borrowed from a grand hotel, the main staircase (bottom right) connects the ground-floor lobby with the second-floor elevator lobby, fitness room, and hallway.

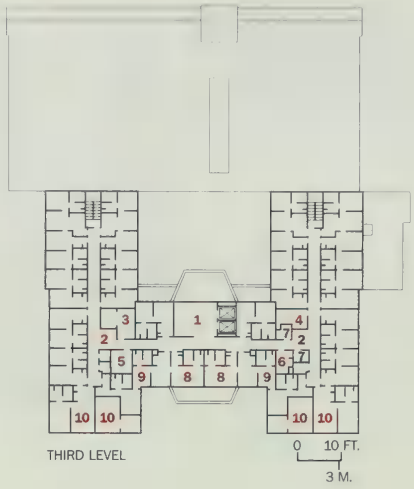






1. *Main lobby*
2. *Reception*
3. *Day-care program*
4. *Formal parlor*
5. *Activity room*
6. *Gallery*
7. *Dining rooms*
8. *Kitchen*
9. *Administration*
10. *Workshop*
11. *Back-of-house*
12. *Courtyard*
13. *Community center lobby*
14. *Gymnasium*
15. *Theater*
16. *Family services*





1. *Elevator lobby*
2. *Wellness center*
3. *Sitting area*
4. *Laundry room*
5. *Spa bathing*
6. *Administrative office*
7. *Housekeeping/ supply*
8. *Studio*
9. *One-bedroom unit*
10. *Deluxe one-bedroom unit*





The first-floor plan (top left) illustrates Weinberg Terrace's connection to the expanded Jewish Community Center and a family-services center. These facilities have their own entrances to protect the privacy of residents, yet they can be accessed directly from the Terrace. The gallery (above left) is a semiformal space with relaxing, soft light where residents can enjoy conversation and meet friends. The formal dining room (above right) is reminiscent of an upscale restaurant with Colonial furniture and fine table settings.



ASSISTED-LIVING 1-BEDROOM UNIT - 700 SF



ASSISTED-LIVING STUDIO UNIT - 400 SF



ASSISTED-LIVING 1-BEDROOM UNIT - 450 SF

1. *Kitchenette*
2. *Living room*
3. *Bedroom*
4. *Sitting room*
5. *Studio*

types of apartments: a studio, a one-bedroom, and a "one-bedroom deluxe," which has a sitting room and space for a fold-out couch for overnight guests. All apartments are equipped with tea kitchens, for preparing snacks or light meals. "The units may be small, but they are real apartments," says Hoglund.

Rooms have been set aside near the elevators on each of the three residential floors for recreation—card playing, exercising, reading. (There is also a beauty parlor and barber shop.) This setup effectively gives each floor a "living room," so residents don't feel the only place to be, other than alone in their room, is the first floor, where there may be too much activity.

Client participation in design

Hoglund notes that in designing facilities for the elderly, working with an educated client allows for the greatest innovation. "What really makes a difference is having clients who understand the difference between assisted-living and nursing care and are motivated about doing something innovative."

Weinberg Terrace's owners understood that there is a symbiotic advantage to keeping their elderly in Squirrel Hill: it helps preserve the culture of the community, and residents derive support from family and friends in a setting that, for many of them, has lifelong familiarity.

The humane motivation to provide aging people with the extra support they need in their later years *as* they need it—rather than "warehousing" them prematurely in nursing homes—is conveyed in the very design of Weinberg Terrace. "We were trying to deliver a message," says Hoglund. "This is not just a modified nursing home that has been fitted out with nice carpeting and light fixtures. Living here is really like living in an apartment building." ■

Sources

Exterior masonry: *McAvoy Brick, Edwards Precast*
EIFS: *Dryvit*
Built-up roofing: *Koppers*
Aluminum windows: *Traco*
Entrance doors: *Kawneer*
Wood doors: *Weyerhauser, Mohawk*
Sliding doors: *Door-o-matic*
Acoustical ceilings: *Armstrong*
Paints and stains: *PPG*
Wall coverings: *J.M. Lynne, Wolf Gordon, Genon*
Plastic laminate: *Nevamar, Wilsonart*
Wall tile: *Dal-tile*
Resilient flooring: *Toli, Armstrong, Altro*
Carpet: *Lees, Durkan*
Lighting: *SPI, Visa, Halo, Visa, Arroyo Craftsman*
Elevators: *Otis*
Plumbing fixtures: *Kohler, American Standard, Elkay*
Wood columns: *Somerset*





The tea kitchen in one of Weinberg Terrace's apartments (top) shows the extent of appliances and food storage areas. The high level of furnishings and finishes in the formal parlor (above) is now becoming typical of assisted-living facilities everywhere.

2 Do the Dutch Do It Better?

AN AGING POPULATION POSES NEW CHALLENGES TO A NATION KNOWN FOR HUMANELY HOUSING ALL.

by Tracy Metz and James S. Russell, AIA

Project: *Toonladder, Almere, Holland*
Architect: *Architectenbureau Wytze Patijn*
Number of units: *200 units for residents of varying levels of acuity*

Project: *Humanitas Bergweg, Dordrecht, Holland*
Architect: *EGM Architecten*
Number of units: *180 units, equally divided between independent living, assisted living, and skilled-care nursing*

Project: *Villa Oudroze, Amsterdam*
Architect: *Mecanoo Architects*
Number of units: *Seven units of assisted living for gay elderly residents*

While Americans worry about how to pay housing and health-care costs for the rapidly rising numbers of elderly people, the day of reckoning has already arrived in Holland. A high percentage of the country's fast-graying population relies on government-subsidized housing and health care, and waiting lists are lengthening. There is no consensus to roll back benefits for the old, however, since the young fear they will forfeit their own coverage.

Holland and the Scandinavian countries pioneered alternatives to nursing homes, and getting away from "the batteries of cells where people are stored," as one architect put it, is still a key goal.

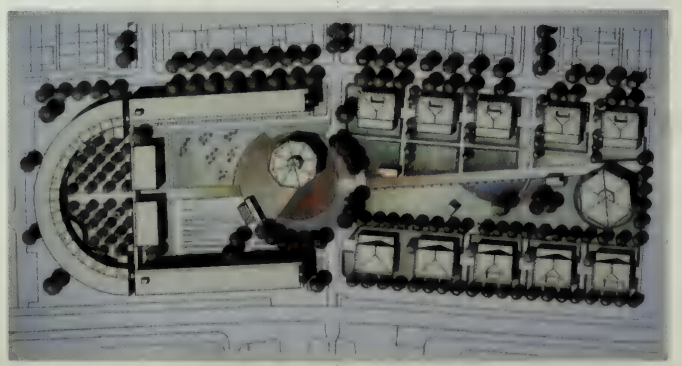
Facilities sponsored by religious and civic groups have long been a part of the Dutch housing landscape, but a small project in Amsterdam, the Villa Oudroze ("old rose"), may be the first project specifically for gay elderly residents (opposite bottom). The seven-unit project, which is attached to an older, larger complex for senior citizens, is based on the idea that living with like-minded people is stimulating and will counter the isolation that many elderly face. Mecanoo Architects provided a small communal area divided from the lobby, which faces a garden, by a curving, artist-designed wall.

Using shared spaces to keep residents active and stimulated is a goal of the Toonladder project (below), whose name refers to the musical scale. Assisted-living units in the Ronde Hof ("round house") face a glazed atrium, but private unit entrances also open directly onto the street. Two of the four-unit, rectangular "quartets" have enclosed gardens where residents with dementia can safely wander. Eight rooms surround a kitchen and shared living space in the hexagonal "octet."

Just as in the United States, Dutch designers are attempting to provide aging residents with higher levels of care without requiring them to move. Assisted-living beds are being added to existing medical or skilled-nursing projects so that common facilities, such as clinics and examination areas, can be efficiently shared. (Some facilities are also reaching out to meet needs in surrounding neighborhoods.) The new projects are known as lean-ons, because of this interdependent relationship.

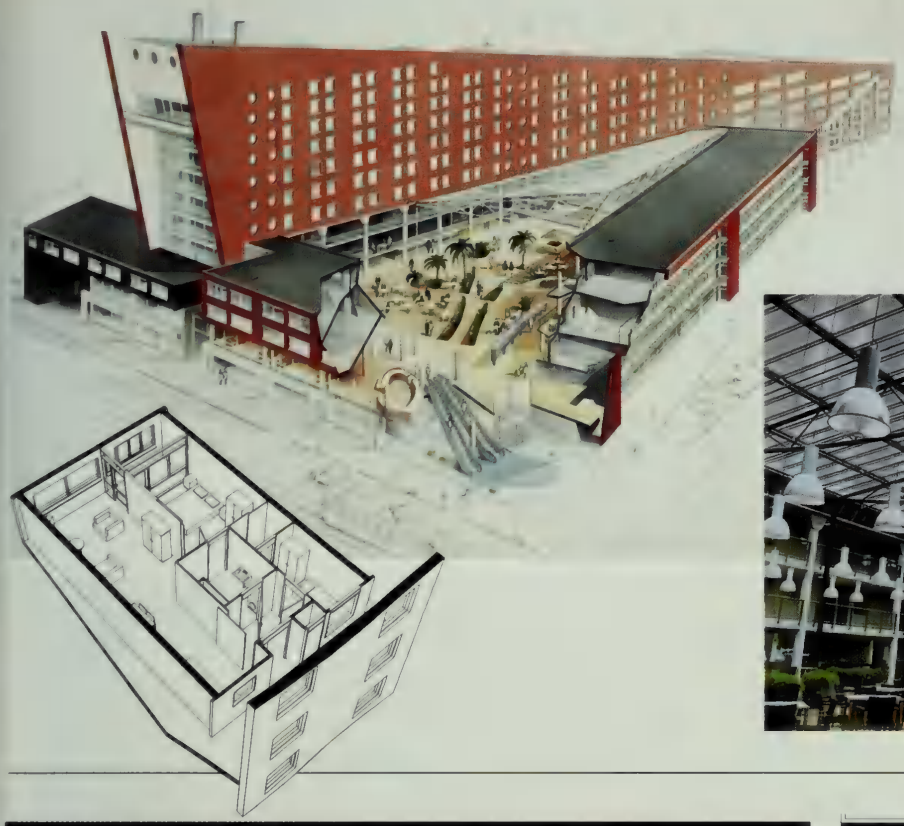
In some units in the Humanitas Bergweg project (opposite top), the entire bathroom can be used as a shower stall, so that a stretcher can be wheeled in if necessary. The bedrooms also have communicating doors (axonometric), which can be closed for privacy or opened when a care giver or family member needs to monitor the resident's condition. Another housing cooperative not only provides sleeping facilities for family members but makes a contract with them to prepare meals or perform other duties as a means of increasing family involvement. ■

Named after types of musical compositions, buildings in this development accommodate differing levels of acuity and mobility. Administrative areas are in the centrally located "concertmeester."



Project: *Toonladder, Almere, Holland*

PHOTOGRAPHY: © PETER DE RUIG (OPPOSITE BOTTOM)



Project: *Humanitas Bergweg, Dordrecht, Holland*

A sweep of skylight glazing covers an atrium that unites the wings of this 180-unit project, creating common meeting spaces for residents. Design measures have been taken to allow occupants to remain in the development as their mobility decreases: the bathrooms, for instance, can accommodate stretchers when necessary.





Project: *Villa Oudroze, Amsterdam*

Added to an existing housing development for senior citizens in one of Amsterdam's historic districts, this seven-unit project was designed for the gay elderly. Recognizing a tendency among some older people to isolate themselves, Mecanoo Architects augmented assisted-living units with a communal kitchen and laundry that faces a garden.



TYPICAL FLOOR PLAN



GROUND FLOOR PLAN

1. *Bedroom*
2. *Living/dining*
3. *Vestibule*
4. *Social room/ laundry*

3 Goddard House Brookline, Massachusetts

AN ASSISTED-LIVING FACILITY IN A RESIDENTIAL NEIGHBORHOOD STRIKES THE RIGHT BALANCE BETWEEN COMMUNAL AND INDEPENDENT LIVING.

by Charles Linn, AIA

Project: *Goddard House, Brookline, Massachusetts*
Owner: *Goddard House*
Developer: *National Development of New England*
Manager: *ADS Senior Housing*
Architect: *CBT/Childs Bertman Tseckares—Maury Childs, FAIA, partner-in-charge; Alfred Wojciechowski, senior designer; Scott Booth, AIA, project architect; Jeff Stikeman, Sherif Anise, Jay Wood, project team*
Interior Designer: *Wellesley Design Consultants—Ann Webb-Johnson, Chuck Steinman*
Engineers: *Aberjona Engineering (structural); ADA Engineering (mechanical/electrical); GEO Engineering (civil)*
Landscape Architect: *Beals Associates*
General Contractor: *Cranshaw Construction of New England*

Project Statistics
Construction cost: *$7.5 million*
Gross area: *81,000 sq ft*
Net rentable area: *49,000 sq ft*
Number of Units: *75 assisted-living, 40 special-needs*

Brookline, Massachusetts, is a small town bordering downtown Boston's southwest edge. In recent years, the community's small hospital lost most of its patients to larger, better-equipped facilities, so it was closed and demolished. Faced with a newly empty six-acre lot in the middle of their chiefly residential neighborhood, the residents of Brookline began to seek appropriate uses for what was then the largest vacant parcel of land in their town.

"A group of neighbors called and asked me what assisted living was all about and whether it would be right for this site," recalls Ted Tye, a partner at National Development of New England, which develops assisted-living communities. National Development's target market is elderly people who can no longer care for themselves but are physically well enough not to require skilled nursing care. "What they were really looking for was something that would anchor the redevelopment of their residential area, which an assisted-living facility would do beautifully," Tye says.

Determining need

To study the economic feasibility of building an assisted-living complex in a given location, Tye's organization typically surveys the surrounding population for people over 75 with the means to afford the facility. The immediate neighborhood is the logical place to market an assisted-living home, since potential residents will be attracted by the promise of a continuing connection to their community. Tye says, "In a town whose population is as concentrated as Brookline's we would expect that people who come to our facilities for assisted living already live within a radius of five miles." People with special needs stemming from Alzheimer's disease, dementia, or other memory-impairing illnesses may come from farther away, since there is a general shortage of facilities equipped to serve them. If the developers determine that enough people in the immediate area can afford and would use an assisted-living home, the project may be deemed economically feasible.

National Development usually invests in and builds its own properties, continuing to hold an equity stake in them after they are up and running. However, in this case, the developer approached Goddard House, a nonprofit organization that has operated a nursing home near Brookline for more than 100 years. "The board of directors of Goddard House had been thinking of expanding their operations for some time," says Tye. "Over a series of discussions, we said to them, 'We're going after this site in Brookline, and it would be perfect for you.' Goddard House provided equity, and we acted as the developer and owner's representative. We brought in ADS Senior Housing as the facility's manager and CBT/Childs Bertman Tseckares as the architects."

Image building

Goddard House is a rambling structure built in the Shingle Style. Its exterior design was an issue not only with the City of Brookline (the city planning department appointed a design review board made up of several architects as well as a landscape architect) but also with the marketing department of the facility. "You have to remember," says senior designer Alfred Wojciechowski, "that in addition to selling to the people who are going to live at the home, you may also be marketing to their sons or daughters. No one wants to make their parent live in a building that looks institutional."

Because Goddard House is not a nursing home, it was built under the residential-hotel section of the building code. This allowed for the introduction of materials typically found in residences—such as exterior wood shingles—which would not have been permitted under the section of the code applying to nursing homes of this size. On the inside, apartments are furnished with hardware, moldings, and doors more appropriate to a fine residence than an institution.

PHOTOGRAPHY: © EDWARD JACOBY



Goddard House's plan is labyrinthine, but for good reason. The exterior walls jog so the building has the greatest possible amount of perimeter wall, and therefore windows, on this restricted site. The design also avoids "bowling alley" hallways. The nooks and crannies created by the twisting hallways are natural places for living rooms, kitchens, and a library.

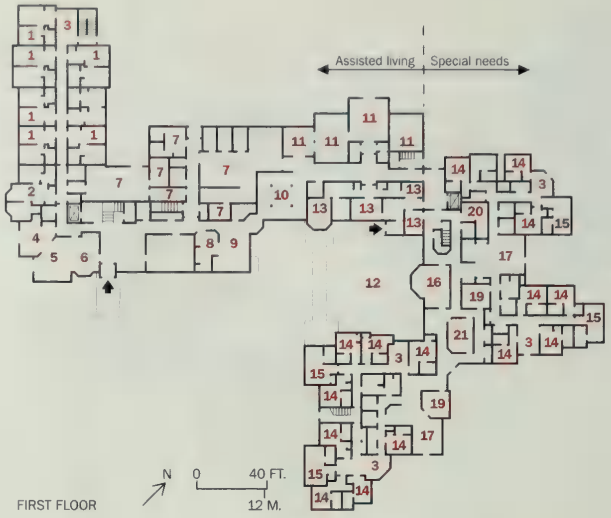
The building's exterior (below) is done in the Shingle Style, reflecting the developer's awareness of a two-tiered market: prospective residents may be drawn to such a building because it seems familiar, and their adult children—who often play a big role in deciding on a home for their parents—will appreciate the absence of institutional qualities.







1. *One-bedroom unit*
2. *Two-bedroom unit*
3. *Living room*
4. *Program room*
5. *Library*
6. *Café*
7. *Back-of-house*
8. *Store*
9. *Country kitchen*
10. *Palm court*
11. *Dining rooms*
12. *Garden*
13. *Administration*
14. *Single unit*
15. *Double unit*
16. *Great room*
17. *House dining*
18. *Kitchen*
19. *Parlor*
20. *Wellness room*
21. *Crafts room*



Goddard House's entry (below), dining room (bottom), and a kitchen and dining area (below right) show how finishes and furnishings integrate to create a comfortable home for residents.





Facility organization

The three-story Goddard House is divided into two basic parts: one wing for those who are in assisted-living care and one for those with special needs. The L-shaped assisted-living floors are furnished with living rooms, cafés, libraries, and program rooms—places where residents may rest or meet friends. Meals are served from a buffet, café, or kitchen.

"Houses" for special needs

Each floor of the special-needs wing is subdivided into two "houses," and each house is organized around a kitchen and dining area. Limiting the number of people per house to 12—with one staff member for every six residents—makes for a consistent communal environment.

This setup also fosters the residents' sense of independence, which is easily compromised in housing for the elderly. "We're trying to create a new way of thinking about these kinds of facilities," says Wojciechowski, "by giving the residents the opportunity to be able to do what we all like to do—like choose when to eat. We're trying to give them as much autonomy as they can handle, and as much as they choose to."

Assisted-living and special-needs residents share some of Goddard House's spaces, where they may occasionally get together



for an organized activity, such as a concert. But since special-needs patients tend to be much stronger physically than the typically frail assisted-living residents and may be prone to violent outbursts, the two groups do not mix very well. "If you're in assisted living," says Wojciechowski, "you don't want someone acting up around you who might push or shove you." Special-needs residents are given free access to a secured garden area, where they may sit or walk along paths that always lead back to the building. ■

Sources

Windows: *Andersen*
Elastomeric roofing: *Firestone*
Exit devices: *Monarch Hardware*
Acoustic ceilings: *Armstrong*
Paints and stains: *Benjamin Moore*
Wall coverings: *Zoffany, F. Schumacher, Seabrook Wallcoverings*
Resilient flooring: *Toli International*
Plumbing: *Chicago, Elkay, American Standard*

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Design Architect: Cesar Pelli & Associates. Prime Consultant and Managing Architect: Leo A. Daly

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CIRCLE 32 ON INQUIRY CARD

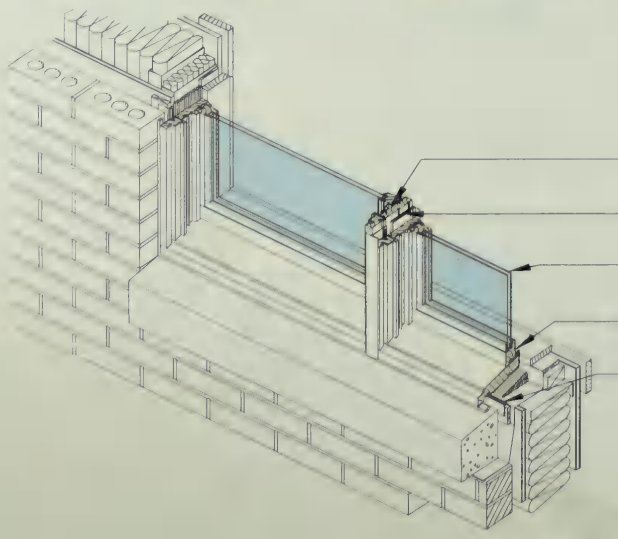
Project Outline

Design a building that children immediately identify as a school, as a place to learn. First, the facility should have a warm and inviting atmosphere. In addition, it must be energy efficient as well as easy and economical for school officials to maintain.



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CIRCLE 37 ON INQUIRY CARD

SUMMARY REPORT ON

Business Week/ Architectural Record

Awards Luncheon

In Conjunction with Andersen Windows' and Herman Miller's "Spotlight on Building Performance"

By Peter Alan Harper

Drawn into animated groups of two or three, the diners alternately noshed on or ignored the oxtail springrolls at their elbows. Randy Brown looked down the elongated white-marble table, nodding at two architects whose client was fueling their discussion by sketching.

"I see excitement about design," Brown said. "When you talk about architects and clients together, you can discuss building the future not just hypothetically."

The architects and clients within Brown's sight managed to create worker- and client-friendly work spaces through collaborative efforts.

They were rewarded Nov. 21 with the Business Week/Architectural Record award at Manhattan's tony Asia de Cuba restaurant for turning their yearnings into environments employees welcome first thing in the morning. The American Institute of Architects sponsored the awards.

Andersen Windows and Herman Miller Inc., two firms that share enthusiasm for collaboration and a sensitive, people-oriented role for architecture, sponsored the program.

"At Andersen, we are proud to participate as a sponsor of this event, because it recognizes the superior level of design that is achieved when the goals of business and the inspiration of architecture come together, two concepts that need not be at odds," Rod Radosevich, manager of commercial market support for Andersen Windows, told the gathering.



(From left) Dave Ferm, publisher, *Business Week* and Rod Radosevich, Andersen Windows





Mark Schurman, Herman Miller, Inc.

"As exemplified by today's winning projects, when architects and business people work together toward shared goals, the results are awe-inspiring design, increased energy efficiency and the potential for higher productivity among employees."

Mark Schurman, director of corporate communications for Herman Miller, very much agreed with his colleague at Andersen, saying that well-designed work environments "can make a wonderful contribution to business performance."

"These awards certainly support that philosophy and the recipients are compelling evidence that well-designed work environments support that contention," Schurman said. "We very much believe in the concept of the awards and hope they continue for many years and we would certainly consider continued sponsorship."

The BW/AR jury selected nine projects from 153 international entries that demonstrated architecture's ability to directly affect an organization's bottom line by proving that good design is good business.

"The entries were extraordinary in demonstrating the value of collaboration," jury chair and architect Frances Halsband said. "It's clear that plenty of savvy executives

understand the competitive advantage gained by working with an architect from the early planning stage.

"In fact that often made the difference in the success of their increasingly sophisticated missions."

For Brown, collaboration was key to designing the corporate office of the Greater Omaha Packing Co., which slaughters and ships high-end beef that winds up at expensive steak houses worldwide, generating $425 million a year in sales. Its owner and president, Henry A. Davis, gave Brown a charge: "I wanted this to be an office and an entrance into our company, not just a plant that creates beef, but an entrance into a different kind of company."

Davis also wanted, Brown said, "a relationship between the plant and the offices."

But to accomplish this required meeting after meeting that "very much becomes this intellectual conversation and you stimulate each other," Brown said.

"That's why we took all the construction materials you find in a processing house and used those in the offices: stainless steel, perforated metal, ceramic colors, exposed bar joist ceilings and solid surface material to create the corporate office," Brown said. The results are "something neither of us could have done alone."

They installed a 6-foot by 50-foot table that created a shared work space and that "instantly improved the lines of communication," Brown said. The workers also got views of the outdoors, interior plants, good heating and air conditioning and a skylight that allows the natural light in.

The feedback was immediate. Davis said that prospective clients remarked on the results: "When we first stepped into your plant we could see that it was different." That helped them understand that the product was high quality also.

"That open mindedness happens right when you enter the entrance way that Randy designed," said Davis, who acknowledged he had to trust Brown's judgment because initially he couldn't see the design's strengths. "It was a lot more powerful than I could visualize on paper. It was a much stronger statement."

But Brown added that "when you have clients with a vision and architects with a vision, you get a much stronger end result."

The award recipients were:

- Darlow Christ Architects, Cambridge, Mass.; Brew Moon Enterprises Inc., Boston, Mass.; Brew Moon Restaurant and Microbrewery, Boston, Mass.
- Randy Brown Architect, Omaha; Greater Omaha Packing Co., Omaha; Greater Omaha's corporate offices.
- Thompson and Rose Architects, Cambridge, Mass.; Reiter & Reiter, Cambridge, Mass.; Gemini Consulting, Cambridge, Mass.
- William McDonough + Partners, Charlottesville, Va.; Miller/SQA Inc., Zeeland, Mich.; Verburg & Assoc., Holland, Mich.; Miller/SQA Building, Holland, Mich.
- Einhorn Yaffee Prescott, Architecture & Engineering PC, Albany, N.Y.; Hudson Valley Community College, Troy, N.Y.; Dr. Joseph J. Bulmer Telecommunications & Computations Center, Troy, N.Y.
- Hellmuth, Obata + Kassabaum, Houston, Tex.; Northern Telecom Ltd., Ontario, Canada; Bregman & Hamann Architects, Toronto, Ontario; Nortel Brampton Centre, Brampton, Ontario, Canada.
- Mithun Partners, Inc., Seattle; Recreational Equipment, Inc., Kent, Wash.; REI Seattle flagship store, Seattle, Wash.
- James/Snow Architects Inc., Minneapolis, Minn.; Phillips Plastics Corp., Prescott, Wis.; The Origen Center of Phillips Plastics, Menomonie, Wis.
- Pierre Clemencon; Daniel Herren; Andrea Roost, Bern, Switzerland; Canton of Bern, Bern, Switzerland; Unitobler Library, Bern, Switzerland.

ANDERSEN WINDOWS AND HERMAN MILLER: Spotlight on Building Performance



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— **DON GAROFALO**, Executive Vice President, CEO, Andersen Corporation



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CIRCLE 38 ON INQUIRY CARD

The Alchemy of a New Material

AUTOCLAVED AERATED CONCRETE IMBUES A COMMON BUILDING MATERIAL WITH A NUMBER OF ARCHITECTURAL VIRTUES.



Autoclaved aerated concrete can be used with a wide range of building styles.

by Michael Chusid, AIA

The alchemists of old searched for a philosopher's stone that could transmute base materials into articles of greater value. Perhaps this ancient quest has at last been fulfilled in the form of autoclaved aerated concrete (AAC), a manufactured building stone. While it may not be gold, AAC imbues a common building material with enough virtues to enchant the alchemist in any architect. It is lightweight and structurally sound. It is exceptionally fire resistant and thermally and acoustically insulating. It is durable, dimensionally stable, and resistant to water penetration, termites, vermin, and decay. It is easy to handle and compatible with existing construction practices. It is economical and environmentally appropriate. It can be used straight from the factory or given sculptural expression and bas-relief designs. And it provides in a single material a range of performance virtues previously available only by assembling a number of products. To this litany of praise for AAC we can now add another advantage: it is available in the United States.

And it's about time, too. For while AAC was invented more than seven decades ago, it has been unavailable in the United States except for a handful of demonstration projects. It is produced in more than 200 factories throughout Europe, Asia, the Middle East, Africa, Australia, and Latin America and has been used successfully in almost every climate and building type. By some estimates, a greater volume of AAC is produced every year than any building material except regular concrete.

AAC was produced in Quebec during the 1960s and early 1970s and was used in buildings that have stood the test of time in harsh Canadian and Midwestern environments. Now three North American factories are in full production, ground has been broken for two others in Florida and Arizona, and industry insiders are predicting that the material will be available throughout the country within a few years.

The introduction of AAC into the United States is driven by changes in the construction marketplace. Lumber-price inflation has challenged builders to look for alternatives to wood framing. Many U.S. designers have become familiar with AAC while working on international projects. The environmental qualities of AAC have made it increasingly attractive. AAC can satisfy the more stringent construction standards promulgated in the aftermath of recent hurricanes and earthquakes. Anecdotal evidence also suggests an increased concern overall for the quality of construction and life-cycle value, due perhaps to the aging of the baby boom generation.

THE ENVIRONMENTAL QUALITIES OF AAC MAKE IT ATTRACTIVE.

These factors, plus the continuing strength of the construction economy, have given investors the confidence they need to commit the $20 to $30 million or more required to build an AAC plant.

Introducing AAC

AAC is a factory-produced lightweight precast concrete and can be produced as large building blocks, panels, or planks. Manufacturing begins by mixing portland cement, lime, silica sand or fly ash, water, and aluminum powder or paste, and pouring the slurry into a large mold. If panel reinforcing is necessary, steel bars or welded wire mesh are also put in the mold. The aluminum reacts with the products of hydration in the concrete to release millions of tiny hydrogen gas bubbles and expand the mix to approximately five times its original volume. The hydrogen evaporates and leaves behind a closed-cell, cellular concrete mixture. When the expanded mix has set, the "green" aerated concrete is removed from its mold and cut into blocks or slabs of the required size and configuration. The material is then steam-cured in a pressurized autoclave. This results

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education series looks at autoclaved aerated concrete. After reading the article, complete the questions (page 170) and check your answers (page 172). AIA members may fill out the self-report form (page 172) and send it in for two AIA Learning Units.—Mark Scher, AIA Director Professional Education Products and Services*

Learning Objectives:

After reading this article, you will be able to:

1. *Evaluate the environmental, safety, and welfare characteristics of autoclaved aerated concrete (AAC).*
2. *Identify at least 10 characteristics that illustrate AAC's flexibility as a building material.*
3. *Cite economic, fabrication, and performance factors for using AAC in the U.S.*

Michael Chusid, AIA, is a consultant to building-product manufacturers. His Los Angeles–based company, Chusid Associates, helps develop and market innovative building systems. He can be reached by E-mail at michael@chusid.com or by telephone at 818/986-9901.



Reinforced AAC panels can be used as a prefabricated structural system. The panels are much lighter in weight than conventional precast concrete, reducing dead loads and simplifying construction. AAC also provides thermal, noise, and fire resistance, making the system suitable for hotels, apartments, schools, nursing homes, and other low- and mid-rise buildings.

in a fully hydrated concrete that is lightweight, strong, thermally efficient, and more dimensionally stable than regular concrete. In fact, autoclaved aerated concrete turns to rock, forming microscopic crystals of the mineral Tobormorite, a form of calcium silicate hydrate.

While AAC can be used in much the same way as other types of masonry or prefabricated building panels, there are important differences. For example, the light weight of AAC makes shipping and handling easier. Instead of the 8-by-16-inch block used in conventional concrete masonry unit (CMU) construction, AAC can readily be laid in blocks up to 12 by 24 inches or more in size. These larger blocks allow walls to be erected more rapidly, yet their light weight (20 pounds per square foot of an 8-inch-thick wall for AAC vs. 37 pounds for normal-weight CMU) reduces the risk of back injuries among masons. AAC blocks are solid units and do not need to have hollow cores. Instead of the mortar bed used in conventional masonry joints, AAC is laid with a thin-bed adhesive mortar. Since the solid units have a large area of adhesion, AAC joints develop sufficient strength for walls to function monolithically, even without reinforcing.

THE PHYSICAL STRUCTURE THAT MAKES AAC AN EFFECTIVE THERMAL INSULATOR BOOSTS ITS FIRE-RESISTANCE AND ACOUSTICAL PROPERTIES.

AAC panels are typically produced in thicknesses from 3 to 16 inches, 24 inches wide, and up to 20 feet in length. Integrally reinforced AAC panels can also be used structurally in floor and roof decks as well as walls. This allows AAC to be used to prefabricate a complete building envelope and partition system. Compared to conventional precast panels, lightweight AAC panels can be positioned with light cranes or derricks. Wall panels can be installed vertically or horizontally and edges can be profiled to create interlocking joints.

A practical construction system

Because of AAC's workability and its light weight, it is very easy to build with. The masons and carpenters who have worked with the material report that the learning curve for AAC installation is short, and that construction proceeds more quickly than with other building materials. These attributes make AAC a potentially popular material for do-it-yourself builders.

AAC weighs just 25 to 50 pounds per cubic foot, compared to 150 pounds for normal reinforced concrete. The lower-density version of AAC has more voids and offers greater insulation; the higher densities are used where greater strength is required. Depending upon density, AAC provides compressive strength of 300 to 900 pounds per square inch, enough to support load-bearing buildings of three to four stories. Reinforced panels are capable of carrying typical floor, roof, and wind loads with spans as great as 20 feet. AAC has been used satisfactorily in seismically active and hurricane-prone regions around the world.

Energy, environment, and AAC

Much of the current appeal of AAC is its apparent environmental correctness. It is manufactured from raw materials that are in abundant supply, and it uses these raw materials efficiently since AAC is mostly air. Other than energy for autoclaving and the emission of water vapor, the manufacturing process is clean and nearly free from waste. While current U.S. producers use silica sand in their product, AAC can also be produced with fly ash recycled from coal-burning power plants, creating a demand for a product that is now considered waste. AAC is inert, nontoxic, and not a source of indoor air pollution. The material has a green "cradle-to-cradle" life cycle. At the end of a building's useful life, AAC panels can be disassembled and reused. Or, when demolition is indicated, AAC debris can be pulverized and used in the manufacture of new materials.

At an R-value of 1.25 per inch, AAC has less insulation value than glass fiber or insulation boards but significantly outperforms conventional concrete (with an R-value of 0.1) or masonry. This insulation performance is enhanced in three ways. First, an AAC wall or roof deck provides solid insulation, without the cold spots associated with

through-wall framing members or fasteners. Second, the dimensional stability of AAC reduces the propagation of cracks that could allow air leakage. AAC buildings may be so well sealed that ventilation may even be required to provide necessary air changes. And third, AAC provides thermal inertia, which reduces fluctuations in a building's heating and cooling demands. Because of its unique physical structure, AAC provides greater thermal inertia than conventional masonry despite its relatively low mass. In many temperate environments, an 8-inch-thick AAC wall provides more than the required thermal protection without additional insulation.

AAC can be used without vapor barriers in many climates and building types. In buildings with high relative humidity, however, such as paper mills or swimming pools, condensation and freezing within the material may damage the wall. To avoid this, it may be necessary to use an interior finish with a low vapor permeability to keep moist air from entering walls, and an exterior finish with a high vapor permeability to allow moisture to evaporate.

The physical structure that makes AAC an effective thermal insulation also gives it desirable fire resistance and acoustical properties. In panel form, AAC offers up to 4 hours of fire resistance with 4-inch-thick wall panels, and 8 hours with 8-inch-thick panels (ASTM E-119, load-bearing). Not only are these values significantly higher than those of other common wall systems, they are available in a wall that is both lightweight and simple to install. This makes AAC panels attractive for use in shaft walls, area separation walls, and other critical fire-resistance applications. Acoustically, a 4-inch-thick partition offers a sound-transmission class (STC) of 41, comparable to the performance of a metal stud partition with ⅝-inch Type X gypsum board on both sides, common in office settings. Thicker AAC walls produce higher STC ratings.

Exterior surfaces are typically plastered, finished with textured coatings, or given veneers of tile or thin brick. If left exposed, as is sometimes the case in less developed countries or utilitarian structures, the AAC surface can be damaged by abrasion and will become stained when airborne dirt and moisture collects in open pores. However, finishing can usually be postponed until a more convenient time if AAC is installed during inclement weather or if a delay is required for efficient construction scheduling. Interiors can be given a plaster or drywall finish, covered with heavy-bodied wall coverings, or painted. In industrial buildings, the light color of AAC may be acceptable if left unfinished.

A new age of stone carving

AAC can be shaped with simple hand or power tools. The surface can be incised to create reveals, signage, and graphics. In Japan, it is common to rout a grid pattern into the surface of AAC panels to create shoji screen–like proportions. Corners of walls can be rasped to create rounded edges or entases, and arches can be cut with saber saws. Horizontal panels can be tapered to create a clapboardlike profile. Adhesive mortar can be used to laminate thin slabs or strips of AAC to an otherwise flat wall to build up quoins, cornices, and other ornamentation. Bas-relief treatments can be carved into the surface of an AAC wall.

While traditionalists will climb onto scaffolds to carve walls in situ, digiterati will choose instead to feed their computer files into







Relief and ornamentation can be carved or milled into AAC walls. While AAC is easily cut, with a finish coating it is no more prone to vandalism or abuse than wood siding, plaster, or other common building materials.



Lightweight and easy to work with, AAC blocks can be cut with hand or power tools and are compatible with conventional building techniques.

numerically controlled machines to mill designs in the factory.

In its ability to be shaped, the concrete "foam" of AAC is similar to the plastic foam used in exterior insulation and finish systems (EIFS). Relief work in EIFS is limited, however, by the difficulty of wrapping complex shapes with reinforcing mesh. Since the coatings used with AAC do not generally require a mesh, AAC permits much greater exploration of its sculptural qualities.

However, this exploration of decorative form is surprisingly rare, even among European designers who have had the most history using AAC. Indeed, most projects constructed with AAC seem to exploit the material's flatness. But given the current vogue for nonlinear forms in architecture, it is certainly an area ripe for experimentation.

Acceptance in the American marketplace

When transferring a foreign building technology into the United States, there is always an adjustment period as material compatibilities are tested and the new product is integrated into domestic construction practices. An architect detailing AAC for the first time must work closely with the AAC producer and with manufacturers of the windows, flashing systems, and other materials that abut or tie into the AAC. To install wiring, piping, or tie-down rods, raceways are routed in AAC walls and then covered with grout or patching compound. Simple ties and anchors, similar to those used in other types of masonry or precast-concrete work, are used to attach AAC to other construction materials. Trim and other elements can be fastened to AAC with conventional nails and screws or with special anchors.

The bottom line on AAC is, of course, its affordability. AAC is competitive with other building materials, and it offers benefits that can reduce the total cost of a project. For example, the light weight of AAC compared with conventional concrete and masonry yields overall structural economies by reducing the mass that must be considered in seismic design and the dead load transmitted to foundations and superstructure members. AAC is economical to ship and handle and installs easily without special crews or equipment. Prefabrication and quick erection shortens construction time, reducing construction and financing costs. AAC's durability, fire resistance, and energy efficiency may reduce property-insurance premiums and operating expenses, contributing to the product's life-cycle value.

Note that product performance and recommended details vary from manufacturer to manufacturer and should be verified with AAC producers and applicable codes. After many years of laying the groundwork for AAC in the United States, National Evaluation Reports on the material, approved by all the national code bodies, are on file with the model code agencies. The American Society for Testing and Materials is in the final review process of a standard for AAC units, and the American Concrete Institute is drafting standards for engineering AAC.

Current and future availability

The first two AAC plants in America are both operated by leading international AAC producers. Hebel has a plant in Georgia, and Ytong has an operation in central Florida. Contec makes AAC in Monterey, Mexico, and has sales offices in Texas. Equipment for another plant in Florida is on order, and work has been started on a plant in central Arizona. While AAC's light weight makes it feasible to ship, each plant will primarily serve a local geographic area. The economical shipping radius increases, however, for buildings with stringent fire-resistance or other performance requirements. And for special projects, boatload quantities from overseas plants put AAC within reach of most of North America.

While the foundations for using AAC have been laid, its future in North America remains to be seen. To become anything more than a specialty building product, AAC will have to compete against wood framing, traditional masonry, conventional types of precast concrete, and metal building panels—construction systems that are deeply entrenched in the American way of building. Furthermore, AAC must compete against other new systems, like light-gauge steel framing and stay-in-place concrete forms, that are also fighting for an expanded share of the

AAC WILL HAVE TO COMPETE AGAINST TRADITIONAL AMERICAN MATERIALS.

U.S. market. AAC producers will have to invest not only in more plants but also in additional marketing to train a generation of designers and builders in its use.

Still, the growing number of U.S. projects completed with AAC attests to the material's worthiness. It has been used in hotels, housing, offices, and industrial buildings and is winning its share of converts. In an age of high-tech innovation, it is ironic that one of the most important building systems of the future may be a 70-year-old material. Yet the years ahead present the construction industry with the challenges of meeting the needs of a growing population while at the same time conserving resources and improving the quality of human habitats. If AAC can help us meet these challenges, it will be alchemy indeed. ■

For Additional Information

"Autoclaved Aerated Concrete—Properties, Testing and Design," RILEM Technical Committees 78-MC A 51-ALC Recommended Practices (London: E & FN Spon Division, Chapman and Hall, 1993).

Robert G. Mathey and Walter J. Rossiter, Jr., "A Review of Autoclaved Aerated Concrete Products" (Washington, D.C.: U.S. Department of Commerce [NBSIR-87-3670]).

Manufacturers

Hebel USA, 2408 Mount Vernon Road Atlanta, GA 30338; 770/394-5546; 800/35HEBEL; www.hebel.com

Texas Contec, 200 West Expressway 83, Suite K, San Juan, TX 78589; 956/783-5422; fax 956/783-5155

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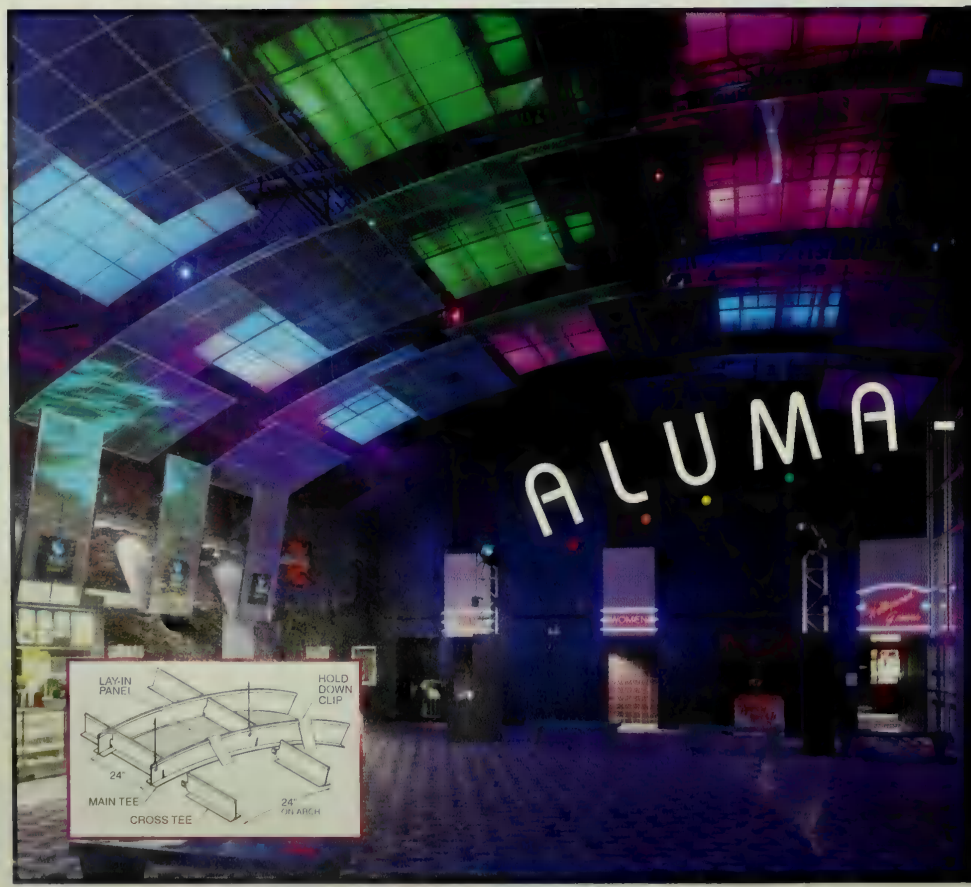
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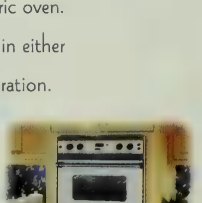
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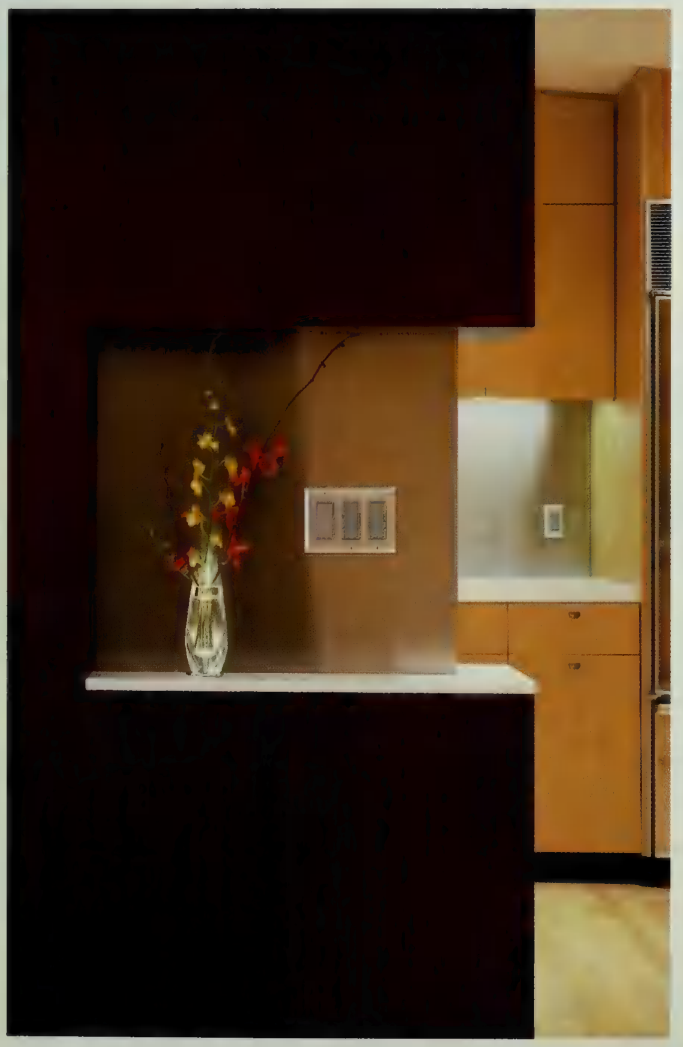
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CIRCLE 48 ON INQUIRY CARD

KITCHEN & BATH PORTFOLIO

Kitchens and baths are central focal points for both architects and their clients. However, while some architects want to blur the lines between traditional public and private space, many clients are demanding that their kitchens be family gathering and entertaining places and that bathrooms be private and luxurious retreats. Also thrown into the mix are nontraditional materials incorporated into the design scheme, such as restaurant-style stainless-steel backsplashes and a patchwork of colored plywood panels, which seems to be all the rage. On the following pages, readers will find ARCHITECTURAL RECORD's fourth annual Kitchen and Bath Portfolio—highlighting eleven projects from the United States, Canada, and Mexico that deal with these design issues. Each project was selected from recent residential work submitted as part of our Record Houses award program. Once the editors selected the projects to be published in the April issue as the Record Houses of 1998, the remaining entries were reviewed specifically for their kitchen and bath designs. Other work was submitted independently. If you are interested in sending in a kitchen and/or bath project for the fifth annual portfolio, please do not hesitate. We look forward to hearing from you.
—Elana H. Frankel, New Products Editor

UPDATING A 1950s HOUSE FOR A YOUNG, STYLISH FLORIDA COUPLE



Formica's Ligna was used for the mahogany-veneer partition wall. The stainless-steel kitchen backsplash wraps around and blends into the mahogany wall. A Carrara marble counter serves as a visual transition to the white Corian kitchen countertops and provides a good location for car keys or the day's mail.

The remodeled kitchen and dining areas of this home were designed to complement the clean, spare lines of the existing 1950s architecture with a more modern, open plan.

Sarah H. Gerber, the project's architect, facilitated this open plan idea and transition between spaces with a mahogany-veneer partition wall (left). The wall, a floating plane that slices through the living area into the kitchen, leaves a skid mark on the maple flooring (shown below as purple heart, bubinga, and ebony inlays).

Gerber further opened the space by continuing the kitchen counter, unbroken, into the adjacent dining area. The counter and its base cabinetry were designed as furniture to reduce the definition between kitchen and dining room.

In keeping with the open plan, the television's swivel arm allows one miniature set to be viewed from both rooms. For future use, a phone line has been installed in the kitchen so the television stand can easily be adapted to a computer stand with Internet connection—for downloading recipes to refer to while preparing meals.

Architect: *Sarah H. Gerber, Winter Park, Florida*
General Contractor: *Winter Brothers Construction*
Sources: *Corian (solid surfacing countertops); Formica Ligna, stainless-steel backsplash, Carrara marble counterpiece , chrome halogen accent light, mahogany veneer (partition wall); Regal Cabinets (custom cabinetry); Hafele (nickel-plated brass and brushed-aluminum hardware); Franke (sink and faucet); Miele (wall oven); Subzero (refrigerator); Lightolier (downlighting); Philippe Starck/ Driade/Luminaire (Olly Tango maple-veneer chairs); Luceplan (Costanza pendant light); Sarah H. Gerber (dining room table)*



ONE SOUTHWESTERN ARCHITECT AND THE BEAUTY OF TWO UNIQUE PROJECTS

The kitchen and dining area (below) is the main daily living space for a Los Duranes, New Mexico, family. Once two separate rooms, this large space is now used for entertaining and family gatherings. According to architect Garrett Smith, AIA, the interaction between outdoors and indoors is key to the design, as is the requirement to create spaces within a space that accommodate a variety of uses.

The kitchen is direct in plan but flexible and well laid out for large gatherings or daily family use. The dining area is set apart from the kitchen by certain design elements, including a fireplace and pylons at one end of the kitchen. These pylons hold sliding pocket doors to visually close off the kitchen when the cook needs privacy.

Exposed wood trusses are combined with hand-plastered walls and warm gray concrete floors to create a comfortable ambiance. The lighting enhances the use of materials, angled walls, and refined detailing.

For another New Mexico project, a 3,000-square-foot house that is also often used for entertaining, Smith created a small, intimate powder room (right) as a surprise for guests.

Intentionally designed with utility of space in mind, this cozy powder room relies on color, tile materials, and the sink's single graceful piece of cut glass for its visual impact.

Echoing the natural hues of the surrounding New Mexican landscape, the bathroom's subtle and organic color scheme lends itself to the traditional Southwest pueblo style. However, the space remains distinctly contemporary, with the sink's clean, geometric lines and overlapping and intersecting planes.

Architect: *Garrett Smith, Ltd., Albuquerque*
Sources: *Kitchen—Weathershield (doors and windows); Kohler (sink); Moen (faucet); ABHT Laminati (plastic laminate); Wedgewood 1935 (range and oven); Brian Flynn (kitchen terrazzo); Cottonwood Woodworks/ Designed by Garrett Smith, Ltd. (casework)*
Powder room—Fiandre (tiles); Irving Uffer/Wholesale Mirror in Albuquerque (glass top); Kroin (faucet and lavatory); Elger (toilet); John Suttman (burnished- steel pieces); Garrett Smith (hand-colored plaster walls)





PHOTOGRAPHY: © KIRK GITTINGS

A MANHATTAN PREWAR WRECK IS REHABBED WITH MAHOGANY

The project team had a few overall design concepts for this needy New York City apartment—mahogany paneling, metal railings, and aluminum and glass pivoting doors. Ultimately, the design depends on the continuity of these materials; the kitchen and master bath are shown here as examples.

The custom aluminum and glass doors used in the kitchen cabinets (far right) match the pivoting glass doors that separate the entry foyer from the dining room. The mahogany cabinets match the mahogany paneling used throughout the apartment. Black Formica countertops with aluminum edging pick up the palette of the black-and-white checkerboard floor.

In the master bathroom (right), the aluminum detailing used to fashion door handles and shelving throughout the apartment informs the design of the bathroom vanity.

Architect: *Joel Sanders, Architects, New York City*
Sources: *Richard Goloveyko, ACME Designs (cabinet doors and bathroom vanity); Richard Newton (millwork)*





A COLORFUL MEXICAN RETREAT DESIGNED FOR THE WHOLE FAMILY

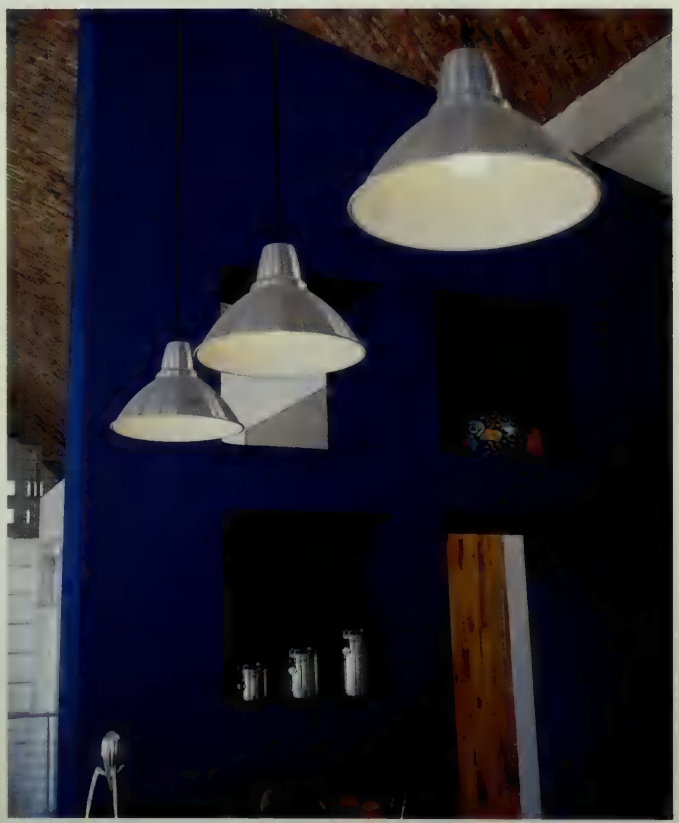
When a Cuban-American couple with five children and eleven grandchildren wanted to create a family vacation home in Baja, they called on FORS Architecture.

The kitchen, meant to be the heart of the house, opens to the main living spaces. With as many as 30 people in the house at one time, however, the couple also wanted the kitchen to be visually shielded. This was accomplished with a dramatic blue wall (right).

The downstairs suite of bedrooms, designed for the children and grandchildren, has a yellow tiled bathroom (left), which is divided by a custom fabricated galvanized door. One side has a shower and sink; the other, a toilet and sink. The brightly colored tiles are distinctly Mexican, and the planning answers the demands of a large family.



Architect: *FORS Architecture/ Fuenteville.Sotinsky, Berkeley, California*
Sources: *Kitchen—Behr (paints); Stonco (ceiling fixtures); Philippe Starck/Alessi (juicer); Muebles Morelia (dining table); Bathroom—Tecate Tile (handmade Talavera tiles)*



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CIRCLE 49 ON INQUIRY CARD

REMODELING A MASTER BATH HIGH IN THE HOLLYWOOD HILLS

This California client had a few simple requests for a new master bathroom: a steam shower, a single sink, a toilet, limited clothing storage, and a better connection to the pool. The redesign took all of this into account and created a sense of overlapping spaces for both bath and bedroom. The bathroom's exterior wall was redesigned as a series of 4-by-6 posts with fixed glazing and continues inside to partially divide the space (below). The bedroom's wood floor was extended into the sink and wardrobe area. The sink and wardrobe area were combined as an extension of the bedroom, with a vanity and closet space. The toilet will be partially screened by a sliding obscure glass panel, not yet installed.

Architect: *Koning Eizenberg, Venice, California—Tim Andreas*
Sources: *Finland color plywood and Finland birch plywood (casework, vanity, door, and closet); Philippe Starck (toilet and sink faucet); Paul King Construction (project contractor and wood stud framing at glass wall); Halo (wall lights)*





A NEW YORK CITY TOWN HOUSE IS LOVINGLY RESTORED

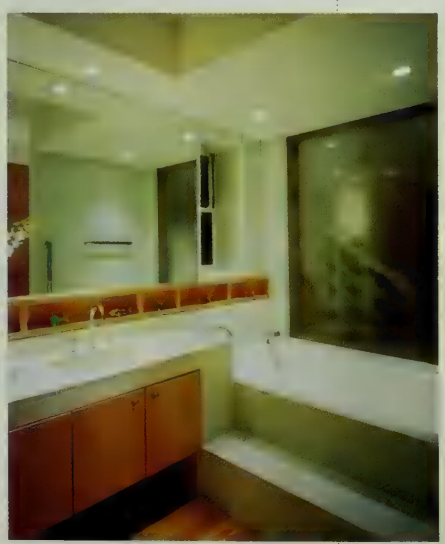
In restoring this century-old, five-story town house on the Upper West Side of Manhattan, the owners were particularly concerned about the dark and narrow spaces that are common in this type of building. To address the problem, Safdie Rabines Architects removed portions of the floors to create double-height spaces and allow for natural light.

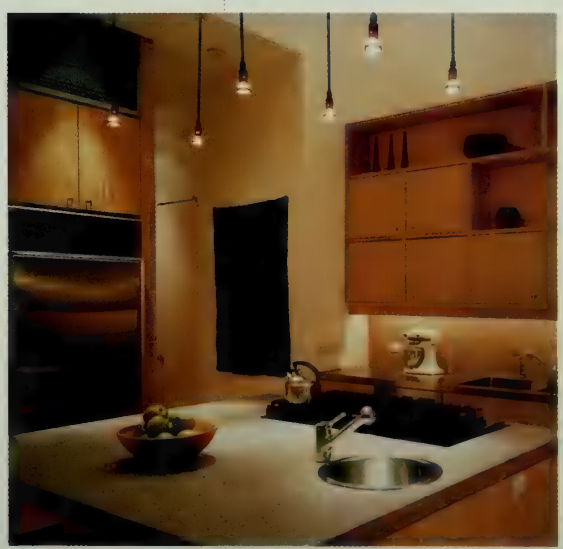
A built-in breakfast area off the kitchen offers views of the back garden and deck. But it is the large Syndacrete island counter that is the kitchen's focal point (below right).

In the master bathroom (below left), sycamore cabinetry, maple flooring, and glass tile combine for a minimal yet warm feeling. Tiles are used to form shallow trough sinks and an elaborate steam shower.

The renovated building now contains five bedrooms, six bathrooms, a study, a den, an office, an eat-in kitchen, dining and living rooms, a large deck, and a private garden, all in the heart of Manhattan.

Architect: *Safdie Rabines, San Diego, California—Ogawa Depardon, administrative architect*
General Contractor: *Rose Lee Renovations*
Sources: *Kitchen—Avodire wood veneer from Certainly Wood (custom wood cabinets); Syndesis, Inc. (island countertop); Franke (island sink); Russell (cooktop); Subzero (refrigerator); Hafele (cabinet pulls); Targetti (island light fixtures)*
Master bathroom—Bisazza Mosaico Vetricolor 20 glass tiles (countertops, trough sink, bath surround, and steps); sycamore wood veneer from Certainly Wood (custom wood cabinets); Dornbracht/Tara Edition (sink and bath faucets); S. A. Bendheim (textured glass)





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CIRCLE 50 ON INQUIRY CARD

A PRIVATE CANADIAN RESIDENCE FOR A MAN WHO LOVES CITY LIFE

Five unfinished town house units were converted into a single town house for this urban bachelor pad. The result—in keeping with the client's desires—is a house that stands apart from anything else in the city of Vancouver, British Columbia.

The kitchen design concept was to create a service wall with ample storage and work surfaces (below). The system, manufactured by Designlines Furniture Systems, contains interchangeable custom cabinet and drawer units attached to an aluminum E-01 E'Lips extrusion. Spanning from floor to ceiling, the system has keyways on each side to allow for the attachment of cast-aluminum bracketry at any height, which can hold custom-made desktops, work surfaces, storage components, support brackets, and lighting. Signage or displays can be attached for commercial use.

Kitchen storage was created as a series of furniture components on a flexible, aluminum extrusion system set against the wall. The kitchen has an 18-foot-long stainless-steel island, constructed in one piece and containing all the necessary mechanical equipment.

The kitchen work surfaces (bottom) are polished slabs of Granirex—a composite of granite and resin—with tapered edges, cantilevered off stainless-steel brackets. The backstops are stainless-steel hardware from Denmark. The floors are polished concrete formed in a stainless-steel grid.

The streamlined washroom (left) features a cantilevered Corian composite sink and an ample countertop fitted onto a brushed stainless-steel support bracket. The mirrors are hung off single-eye support castings.

The room's main attractions, however, are the elegant double shower stalls—partitioned with sheets of glass—and the highly stylized European bidet.

Architect: *Busby + Associates Architects, Vancouver, British Columbia*
Sources: *Kitchen—Design Furniture System (furniture system); Granirex (work surfaces)*
Bath—Corian (sink and countertops); Vola (taps and hardware)







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CIRCLE 51 ON INQUIRY CARD

A CALIFORNIA FAMILY'S VALUES ARE EASILY DESIGNED INTO A NEW SPACE

The kitchen is the central gathering place in this two-story Santa Monica residence and reflects two important values that the family shares: the love of literature and the love of cooking.

The space is articulated by a variety of wood surfaces, including white maple floors, cabinets made from Finland white birch, and colored plywood panels in red, yellow, and butterscotch (bottom right).

The colored panels wrap from the kitchen into the entry space, providing visitors with a hint of the kitchen as they enter the house. Yet the kitchen space does not unfold until the visitor turns the corner or ascends the freestanding stairway to the mezzanine-level library, which is trimmed with a stainless-steel railing of wire mesh (top right).

The angle of the stairway in relation to the mezzanine creates a landing, which the family says feels like a small stage. The double-height kitchen atrium is washed in natural light, which pours through a 15-by-20-foot skylight. Like a trellis structure, the exposed beams provide shade. Directly below the skylight, the countertop of the central island is a white maple butcher block. The countertops adjacent to the sink are stainless steel.

To connect the ground-floor kitchen space with the library, a dialogue is created between the cabinetry colors below and the brightly colored spines of the books above. The kitchen opens up to a pantry wall, which provides ample storage for everyday glasses and dishes. As the wall extends in either direction, it erodes where it turns the corner into the family room and the dining room.

Throughout the newer part of the house, the floors have been redone in maple.

Architect: *Marmol and Radziner, Santa Monica, California*
Sources: *Subzero (refrigerator); Dacor (ovens and cooktop); Kitchen-Aid (dishwasher); Elkay (sink); Indy (recessed lighting fixtures); Bruck (low-voltage lighting fixtures); White maple with semigloss water-based polyurethane finish (flooring); Finland white birch and natural, red, yellow, and brown plywood (cabinets)*





A DARK NEW YORK CITY LOFT BECOMES A LIGHT-FILLED ENVIRONMENT

The primary concern in renovating this New York City loft was a desire for light. Although the apartment is large, it has windows only in the front. To overcome the original layout—a series of small, gloomy rooms—translucent, movable partitions and freestanding cabinets were built, which allow light to penetrate into the entire apartment. In keeping with the architect's straightforward design objective, the emphasis in the kitchen (right) is on simple shapes and natural wood.

Architect: *S. Russell Groves, New York City*
Sources: *Frigidaire (stainless-steel appliances); standard stainless-steel restaurant table (worktable); Piet Hein/ICK (beech and aluminum table); Arne Jacobsen/ICF (beech chairs); Natural MDF (cabinets); stainless steel (countertop)*



COMFORT AND PLEASURE FOR A RELAXING WEEKEND GETAWAY

A fast-paced family dubbed their upstate New York weekend house "a pleasure palace to unwind." And nothing could be more relaxing than a spa room added onto the traditional bathroom. A deep blue sunken jacuzzi tub was custom cut with four ergonomically correct seats built in (right). Across from the tub, a steam room rounds out the soothing space. To maintain a streamlined look, the sophisticated exhaust fans and ductwork needed for ventilation are located in another part of the house; a simple ceiling vent is used in the spa room.

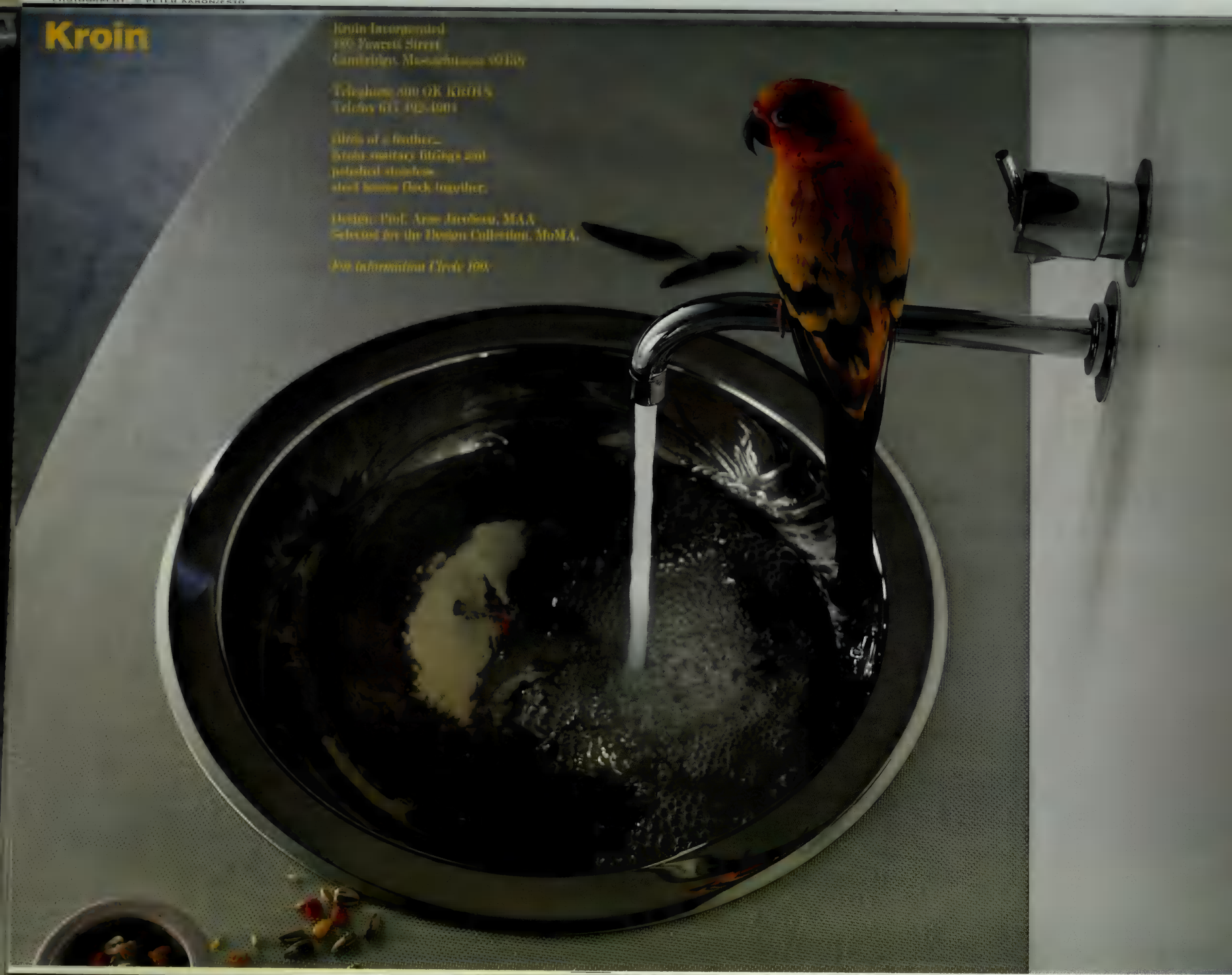
The kitchen (below) was designed with a playful motif, including imported granite countertops shaped and colored as pieces of fruit; custom maple cabinetry manufactured at a local mill; and fresco-style linoleum floors.

Architect: *Centerbrook Architects, Essex, Connecticut—Jefferson B. Riley, FAIA, and Charles Mueller, AIA*
Sources: *Bathroom—American Olean (ceramic mosaic tiles); Mr. Steam (steam generator); Hewi (spa tub handrails and bathroom accessories); spa tub custom tiled Kitchen—Forbo Industries (linoleum); Centerbrook (custom maple cabinetry); Subzero (refrigerator); Garland (range and oven); Kitchen-Aid (dishwasher and microwave); Elkay (sink); Speakman (kitchen sink fittings); Benny Lacca and Sons, Inc. (imported granite countertops); Halo and C. J. (lighting); Russ Alger and Don Hills (built-in wall unit)*

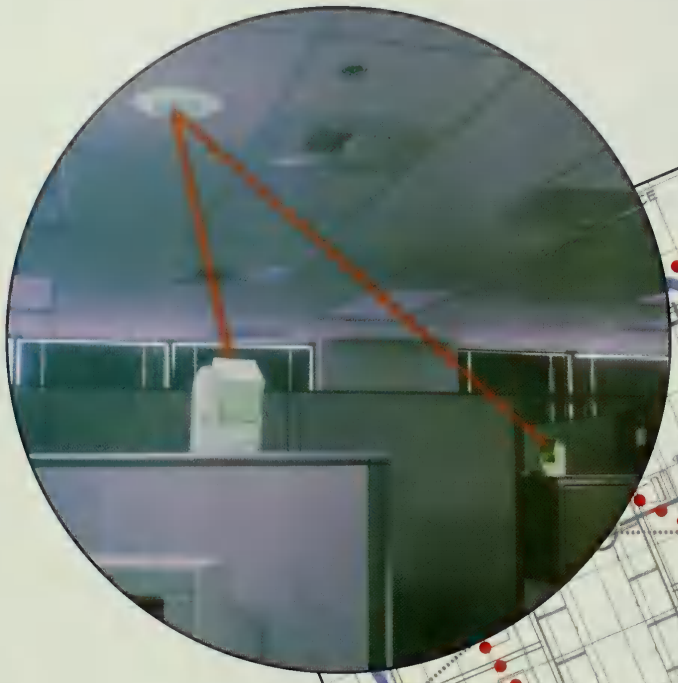




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CIRCLE 52 ON INQUIRY CARD

NEW PRODUCTS

A TURNING POINT FOR SOLID SURFACING, AND THE FUTURE LOOKS BRIGHT

Developed more than 30 years ago, solid surfacing is a durable, nonporous material that has become the kitchen and bath product of choice. Nowadays, though, more and more architects are looking to solid surfacing for commercial applications, such as health care facilities, retail outlets, and, as you'll read in this story, office renovations. One innovative furniture designer has even entered the solid surfacing scene and created a line of chairs. The future of solid surfacing looks even brighter. The scoop: look for exterior cladding applications in the near future. —*Elana H. Frankel, New Products Editor*

Keeping up with Corian is not easy. Traditionally, the solid surfacing material, a blend of acrylics and natural minerals from DuPont, has been used to create ready-to-install vanity tops, top-mount sinks, edge treatments, work surfaces, and decorative inlays for residential and commercial applications.

Today Corian can be angled, sandblasted, routed, sculpted, or engraved for custom tub and shower surrounds, wall cladding, wainscoting, and window trim. One company even partnered with Corian to create built-in appliances faced with solid surface panels. The possibilities seem endless.

So when John Mack from HLW International in New York City saw an 8-foot column in the middle of a Manhattan public relations firm's reception area, he was immediately inspired to think outside the Corian box. As project designer and partner in charge of design for the office remodeling job, Mack wanted a sleek, seamless, monolithic form to take shape. He also wanted the column's color to stand out yet blend in with the overall project's palette.

Mack immediately went to George Shagawat, vice president of Mielach Woodwork, and Bruce Bartholomew, the plant's superintendent, for help. The Edison, New Jersey–based company has used DuPont Corian solid surfacing material in conventional applications, such as vanities, countertops, walls, floors, and sinks, for years. Familiar with the product's abilities and limitations, they knew that their extensive knowledge of the product was about to pay off.

Shagawat and Bartholomew had bent Corian before (for the front of a desk and a counter apron), but when they first heard about covering an elliptical column, they knew they were in for a challenge. . . or two. First, they had to create a male and female press, then bend each with heat—not as easy as it might seem with such a stable product as solid surfacing. After each half came out of a thermal forming oven, the Corian was lathed over the form until it took to the contour. It was left to cool and set for an hour.

The installation process brought its own minor problems. The Corian was sent out to the office site in two halves. Pulling the presses together in the field and making the joint tight enough—in other words, creating a seamless fit—took some time and ingenuity. With a bit of liquid Corian to fill in the joint, the column was strapped and tightened with band clamps. After two days, the joints were sanded down. The entire process, from start to finish, took about a week. According to employees, the column—and its color, called Hot—supports the office design well and is holding up nicely.



The column (above) was covered in Hot, one of Corian's latest Design Portfolio colors. Male and female presses were made, sealed, and then tightened with band clamps.

Commercial settings

New commercial applications for solid surfacing material, like the one described above, are becoming more mainstream. Not every project is going to include covering an 8-by-4-foot elliptical column, but Corian can now be considered more than just a residential countertop material.

According to John Burr, commercial marketing manager for Corian, users can expect to see a host of new commercial products for both interiors and exteriors.

"Corian has a workhorse ethic with aesthetic appeal," says Burr. "It's ideal for high-traffic areas, such as dormitories or hallways." Though Corian has been used in commercial settings for years, the company has answered (or will answer) commercial concerns that will help market the product in new ways.

In the past, for example, Corian has been limited to relatively neutral tones. But with the success of Design Portfolio, a line of vibrant colors that includes Hot, the company is trying to create textured-looking colors that are brighter and more energetic. Soon the commercial community will be able to custom-match corporate or Pantone colors as well as paint swatches for reception areas or work spaces. Corian's Buffalo, New York–based lab will produce the color sample in five days.

Also, Corian will increase the hygienic attributes of solid surfacing in order to meet the needs of health care and food service facilities. Expect new products in late May.

Finally, solid surfacing will be seen as wall cladding for retail stores, malls, and office buildings as well as more exterior uses. Responding to the needs of the marketplace, Corian is developing a durable and aesthetic alternative to spandrel glass or column cladding for exteriors. And though Corian has been used in exteriors for a while now, new products will expand on its durability, graffiti resistance, and versatility. 800/4-CORIAN. DuPont Corian, Wilmington, Del. CIRCLE 150

HARD CHOICES FOR COUNTERTOPS: ALTERNATIVE SURFACING MATERIALS

On the following two pages, readers will see several alternatives to Corian that are available in the marketplace. Although solid surfacing and its cousins are popular (as seen in the four companies represented on these pages), we've also included other surfacing choices for countertops: one in concrete and one in crystallized glass. Why?

Because some clients are looking for an alternative to the polish of stone, the coolness of plastic, or the grout lines that come with ceramic times. Others appreciate the lighter-than-stone quality of glass architectural panels, which reflect light and create a soft, lustrous appearance. As they say, to each her own.

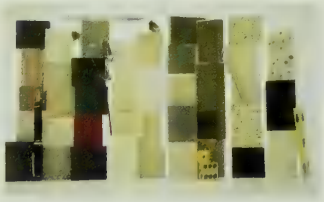
Concrete cone

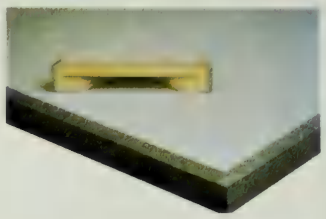
Michael Agins's design, using Buddy Rhodes concrete in the conical table (right), is standard bar height, 44 inches high and 30 inches in diameter. For installation, a metal pipe that fits up the center of the table was welded to a metal plate. The plate was drilled into the subfloor; then hardwood was laid on top. The illusion: The cone balances on the floor. The reality: It's a very stable table. 415/641-8070. Buddy Rhodes, San Francisco. **CIRCLE 151**



Collective surfacing

Formica's Surrell solid surfacing material is a combination of polyester resin and mineral filler. Featured below is a photograph of the company's entire line, 40 designs in five collections. From left to right, the first three columns represent the Granite collection; columns four and five are the natural tones of the Solid collection; the newest additions include columns six and seven, the Spice Mists colors (Ginger Root, Spanish Paprika, Cayenne, and Pesto); the eighth column is the Revolution collection; and the last column is called Innovations, reflecting the look of terrazzo. 800/FORMICA. Formica Corporation, Cincinnati. **CIRCLE 152**





Slab art

Wilsonart International's Solid Surfacing Veneer (SSV), shown here in Grey Mirage, is thinner than traditional solid surfacing. Fabricated like laminate, the 1/8-inch-thick product is all-acrylic and offers a natural stone-like look with the performance features of solid surfacing: it is repairable, nonporous, impervious to water, and stain-resistant. It can be bonded to plywood, unlike its 1/2-inch-thick solid surfacing cousin. Sheets of up to 61 by 145 inches, in 1/4-inch increments, are available for wall panels or toilet partitions. Wilsonart's SSV is backed by a 10-year installed, transferable, limited warranty. 800/433-3222. Wilsonart, Temple, Tex. **CIRCLE 153**

We're not here
to explain the benefits
of solar energy.

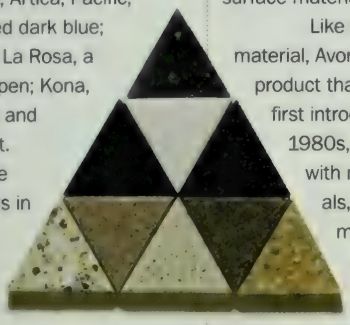


Solar Energy (by BP)

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Pyramid scheme

Recently, Avonite introduced nine new solid surfacing colors. From the top of the pyramid, left to right: Brazilian Blue, mirroring an expensive-looking granite; dark bluish green Cypress; Artica; Pacific, a brown flecked dark blue; Kaleidoscope; La Rosa, a dusty rose; Aspen; Kona, a purplish red; and Autumn Wheat. Though Avonite offers 57 colors in all, these nine new colors include the latest granite-looking solid surfacing material that ranges from simple neutrals to deeper, more intense tones. As seen here, the color range is not limited to only nature's choices.



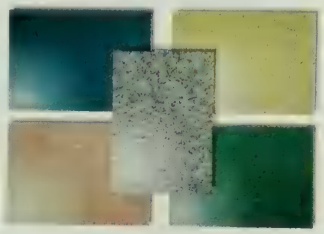
Autumn Wheat, Brazilian Blue, and Kaleidoscope, the three Crystelle colors, are among the most natural-looking solid surface granite replicas. The six new Formstone granites are grouped together as Artica, Aspen, Cypress, Kona, La Rosa, and Pacific. And on an environmental note: the particulates in the new color Kaleidoscope are made from prime reclaimed solid surface materials.

Like most solid surfacing material, Avonite, a polymer-based product that was first introduced in the mid-1980s, is often compared with natural stone materials, such as granite, marble, slate, and agate.

But one of the main differences is that solid surfacing won't stain permanently. Cleaning is done with a damp cloth and ordinary soap, household ammonia, liquid detergent, or an abrasive cleaner. Scratches can be removed by buffing the surface lightly with a Scotch Brite pad. 800/4-AVONITE. Avonite, Belen, N.M. **CIRCLE 154**

Soft options

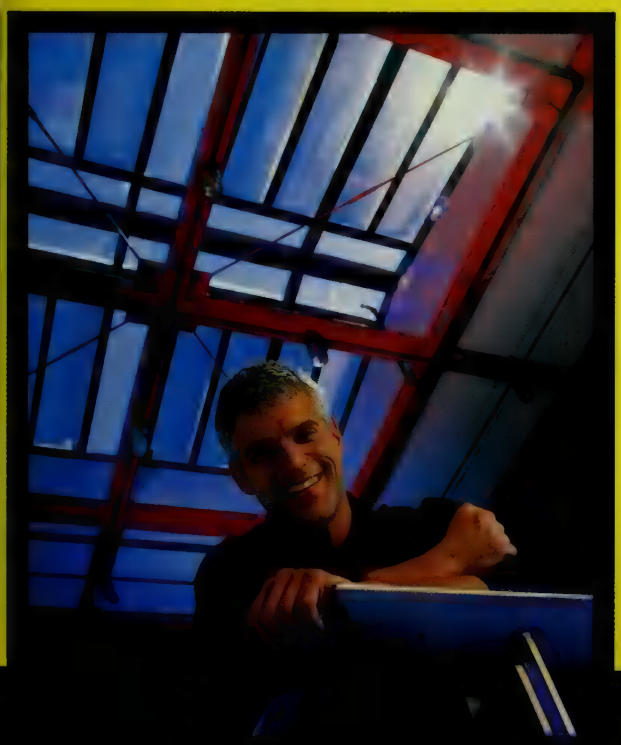
Swan recently introduced 10 new colors in solid surfacing fabrication sheets and molded accessories. Five of them are shown here. The Tahiti line features 10 aggregate shades with softer hues that are gaining popularity for restaurant and cafeteria tabletops and commercial furniture, such as service counters, reception and check-in desks, and wall surfacing. With the addition of the new colors, custom fabricators now have an array of 28 Swanstone solid surfacing shades from which to choose. The company also offers a new kitchen sink catalog, highlighting its complete collection. 314/231-8148. Swan Corp. St. Louis, Mo. **CIRCLE 155**





Crystallized counters

Shown above is an Ohio beauty salon's receptionist's desk made from Neoparies's cladding material. The architectural panels, made from crystallized glass, have a standard thickness of ⅝ inch and are available in eight colors and a variety of blended and pigmented hues. Flat, curved, and corner panels are also available. Resistant to acid, alkali, heat, cold, scratching, and abrasion, the panels also repel moisture. Surface stains are easily removed from the panels with a mild, neutral detergent and water. 800/733-9559. NEG America, Itasca, Ill. **CIRCLE 156**



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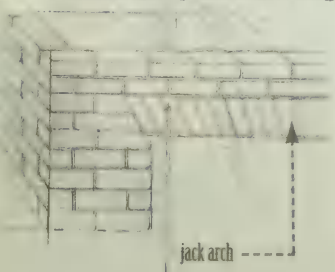
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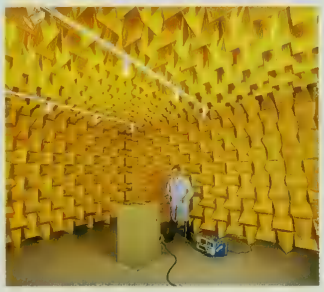


◂ Instant building estimates

Need building cost estimates at 3 a.m.? Don't fret. The California-based publisher Marshall & Swift has a new 24-hour online cost-analysis database for quick and accurate number crunching. Called SEG-SITE, the service is easily accessed through PC-based Windows software and can segregate building costs by business type or individual components for banks, high-rises, fitness centers, retail stores, or supermarkets, among other types of projects. The cost of the starter kit includes software and membership initiation fees. 800/544-2678. Marshall & Swift, Los Angeles. **CIRCLE 157**

▸ Acoustical test site

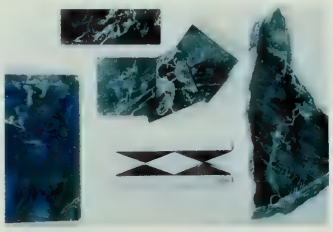
Johns Manville has expanded their acoustical testing capabilities to support their existing and more recent products, such as new acoustical insulations for manufacturers of office furniture, acoustical panels, and furnaces. In addition to a wide range of traditional acoustical test apparatuses for ceiling and wall panels, Johns Manville now uses a new hemi-anachoic chamber (shown) with a robotic microphone-positioning system to scan acoustical materials and finished products for sound-intensity mapping. The company has also improved on their impedance tube techniques and airflow apparatuses. 800/654-3103. Johns Manville Corporation, Denver, Colo. **CIRCLE 158**



▾ Ceramic masonry unit

With both horizontal and vertical reinforcing, Stark's structural glazed facing tile can now stand up to seismic activity as well as high traffic and vandalism, making it suitable for manufacturing plants, hospitals, schools, and gyms. All units conform to ASTM C-126 specs and the Facing Tile Institute Selected Size quality (Grade SS ground ends). Available in three sizes. 800/321-0662. Stark Ceramics, Inc., Canton, Ohio. **CIRCLE 159**



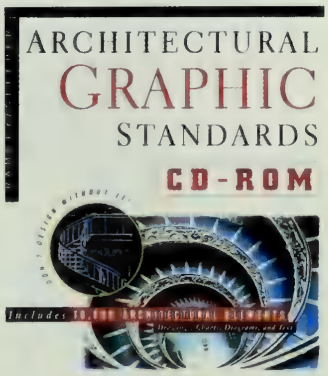


▴ Lapis lazuli tiles

Traditionally, lapis lazuli, a symbol of luck and wealth, was cut for jewelry or ground into powder for cosmetics. Until recently this gemstone was available only in limited quantities, from the farthest reaches of the Andes and remotest Afghanistan. As a result, few architects incorporated it into building work. Today large blocks of lapis are imported by LapisChile for ornamental, custom-made tiles and surfaces. Similar in appearance to some higher-grade Italian marble, lapis complements marble accents for floors and other decorative installations. Due to demand, larger pieces for one-surface floor and wall inserts are in development. 207/871-1310. Access Chile, Portland, Maine. **CIRCLE 160**

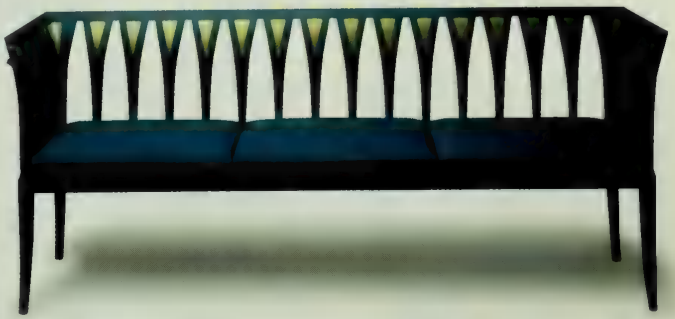
▾ Updated graphic standards

When Architectural Graphic Standards joined the electronic age and went CD-ROM, many of those reference bibles found their way into the recycling bin. With the latest release, version 2.0, more than 50 percent of the structural, mechanical, and electrical system illustrations appear in vector format and can be CAD edited; users are provided with Web access; and a new file format (.DGN) provides data access to MicroStation. 212/850-6000. John Wiley & Sons, Inc., New York City. **CIRCLE 163**



▾ Blue suite settee

In the late 1920s Eliel Saarinen designed the Blue Suite Settee in Cranbrook's American Bauhaus style. Now, in the late 1990s, the Adelta International Company in Helsinki has been authorized by Saarinen's grandson to reproduce the settee. In the United States, the M2L company carries the blue-gray lacquer and gold-leaf piece with exclusive upholstery by Irma Kukkasjarvi. The updated classic sells for $2,550. 212/832-8222. M2L, New York City. **CIRCLE 161**



▸ Metric conversion calculator

Instead of spending precious hours programming conversion factors and formulas into your calculator (or trying to work them out in your head), try the pocket-size, travel-friendly Metric Conversion Calculator from 1-Step. Translates with one touch. 800/9-METRIC. 1-Step, San Diego. **CIRCLE 162**



PRODUCTBRIEFS

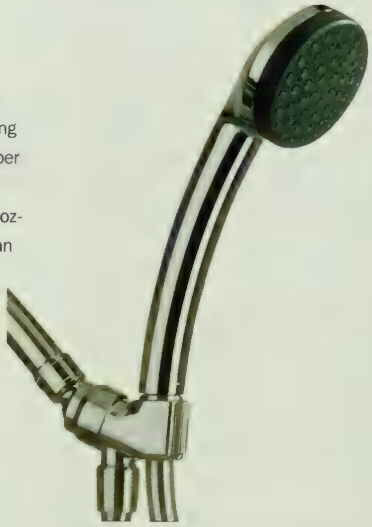


◂ Public washroom accessory

The Simplicity collection includes a variety of washroom accessories for public and institutional facilities. The Roll Paper Towel Dispenser and Waste Receptacle (shown) is constructed of Type 304 stainless steel with a cover-all door that fits neatly into the frame. The dispenser's size, 16⅛ by 41¼ by 9¹³⁄₁₆ inches, fits paper towel rolls 8 or 9 inches wide and 800 feet long in preset lengths. The dispenser mounts 16 inches from the floor to the bottom of the unit (handicapped is 40 inches to level); the removable stainless-steel waste container measures 10 gallons. 914/476-9000. American Specialties Inc., Yonkers, N.Y. **CIRCLE 164**

▸ Handsome handshower

Hansgrohe's Crometta Handshower complies with the American National Standards Institute (ANSI) water-saving rate recommendation of 2.5 gallons per minute. Another feature, the Rub-It cleaning system with silicone spray nozzles, easily removes lime-scale with an occasional wipe of a damp sponge. Connected to a Hansgrohe hose, Crometta becomes a handheld accessory or tub and shower cleaner. Lists for $20; guaranteed for five years. 800/719-1000. Hansgrohe, Inc., Cumming, Ga. **CIRCLE 165**

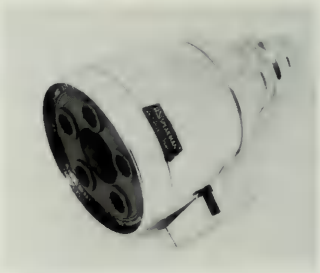






▲ Sleek sinks

Until 1842 Duravit (or Duraba as it was known) produced only tableware. In 1912 the product range was extended to include sanitary items such as ceramic chamber pots. Today Duravit designers have taken it upon themselves to meet a modern-day challenge: making visits to public bathrooms a more aesthetically pleasing experience. Their solution: the Architec range of sleek washbasins (shown), 22⅝ inches wide with generous surrounds. 888/387-2848. Duravit USA, Inc., Duluth, Ga. **CIRCLE 166**



▲ Showerhead restyled

Speakman's Anystream showerhead has had a facelift. To begin with, it now conforms to ANSI's water-flow recommendation of 2.5 gallons per minute. Also, the design integrates a built-in volume and pressure control that can alter flow patterns from hard-and-brisk to a soothing massage. The new showerhead is available in chrome, brass, and white finishes. 800/537-2107. Speakman Company, Wilmington, Del. **CIRCLE 167**

▼ Dual-use protection

The single-piece Lav Shield hides piping, faucet connections, mixing valves, trap primers, and hot-water heaters. Molded from Boltaron 4353, it protects wheelchair users from scalding. The Lav Shield satisfies NFPA Class A interior-finish material safety code 101 and BOCA Class 1 interior-finish material code for fire and smoke ratings. A one-size-fits-all configuration can be used in most new or retrofit ADA-conforming lavatories. 800/340-5969. Truebro, Ellington, Conn. **CIRCLE 168**





▲ Retractable shower doors

Kohler's Helios shower doors are trackless panels that at first retract, then pivot in or out to provide unobstructed access and expanded space. What does that really mean? No more bumping your head on a top rack. Choose from four- or two-panel doors to accommodate a variety of bath and shower installations. Constructed of aluminum, the doors come preassembled. The tempered safety glass may be ordered in three silk-screened patterns: crystal clear with wave, an overall leaf motif, or a shoji screen (pictured). 800/4KOHLER. Kohler Company, Kohler, Wis. **CIRCLE 169**



▲ Cool new bath fixture

Handcrafted and sculpted from Starphire, a clear white glass from Porcher, the Glacier Basin measures 22 inches around by 5 inches deep. The contemporary-styled, frosted banana leaf design etched into the back side of the basin beautifully (and cleverly) hides most water spots. The Glacier Basin retails for approximately $2,295 and comes with an integral faucet deck to facilitate the installation of any single-hole faucet set. 800/359-3261. Porcher Ltd., Chandler, Ariz. **CIRCLE 170**

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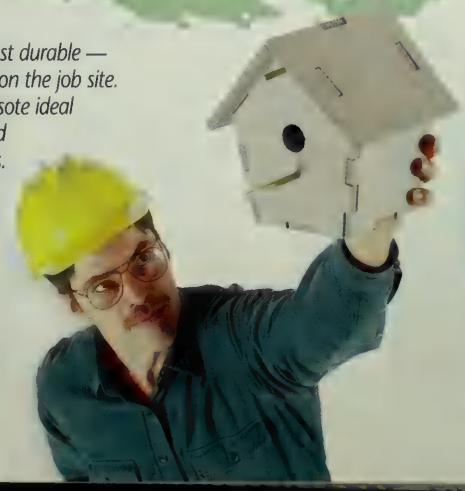
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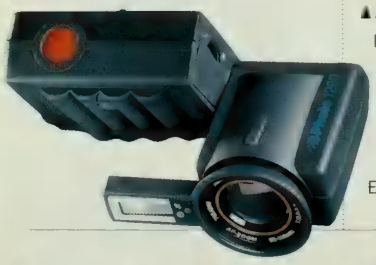


▲ Colorful bird control

Pigeons are determined and intelligent animals. Hot foot gel, rubber snakes, and loud sounds will not deter them from roosting on a landmarked ledge or nesting in an intricately designed nook or cranny. So what's an architect to do? Nixalite's Architectural Bird Control, with rows of 316 stainless-steel needle strips, prevents those flying creatures from nesting or even getting too comfortable. With an added color powder coating, this bird control device can be made virtually invisible. The Colorcoat option comes in several standard shades with custom matching available. 800/624-1189. Nixalite of America, Inc., East Moline, Ill. **CIRCLE 171**

▼ Digital documentation

Agfa enters the high-end digital camera market with ePhoto 1280. A 2-inch, color LCD is attached to the camera, which suits professional needs, generating up to 1.228-million-pixel images from its 1280 mode and an optical swivel zoom lens. What's the really big news? It's under $1,000. 800/926-2432. Agfa, Wilmington, Mass. **CIRCLE 172**



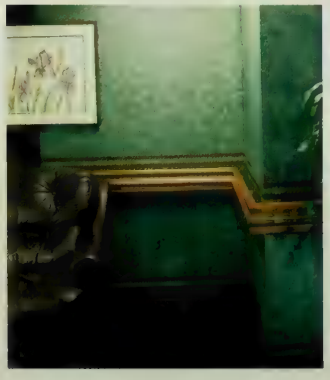


▲ Aluminum louver and frame

Designed to glaze within EFCO's window frames or be installed in stand-alone units, the Louv-Air Series LA-125 A/C louver system of metal wall grilles protects HVAC systems. 800/221-4169. EFCO Corporation, Monett, Mo. **CIRCLE 174**

▶ Hand and chair rails

Solid Pennsylvania hardwood rails from Korowood feature integrated, flexible bumpers locked into aluminum retainers. The bumpers are offered in matching colors to coordinate with Koroseal wallcoverings and Korogard protective wallcoverings. The wood is available in red oak or maple with four stain options: unfinished, clear varnish, red oak, or cherry. 800/628-0449. Korowood, Fairlawn, Ohio. **CIRCLE 173**



▼ Freestanding furniture

In response to the current trend in mobile workstations (that also look good), New York–based designer Edward F. Weller, III created the Gemini collection of freestanding furniture and casegoods for Halcon. The collection, which is available in a variety of warm woods and inlaid patterns, includes mobile work surfaces and storage pedestals that can be moved into various configurations. A perforated-metal panel provides a ribbed, impact-resistant covering for the mobile pedestal. A specially finished composite board can be ordered for desktop surfaces. 507/533-4235. Halcon, Stewartville, Minn. **CIRCLE 175**





▲ Splashy wall accents

Earthenware tile combines the look of antique, handmade European tile with a contemporary palette. It is available in 10 colors, ranging from neutrals with a glossy or matte finish to bolder accents like cobalt blue, maize, brick, and woodland green with a translucent finish. For both residential and commercial settings, Earthenware can be used on walls, countertops, and backsplashes (shown) and is offered in most trim configurations. 214/309-4879. American Olean Tile, Dallas. **CIRCLE 176**

▼ Electric fireplace trimmings

If a wood-burning fireplace is out of the design question, a Symphony electric fireplace is the next-best auxiliary heat source—delivering about 4,500 BTU of total heat. The Symphony plugs into a standard 120-volt circuit and does not require venting or pipelines. To ensure safety, no combustible energy sources are used to produce the flame, so the front glass stays cool and there's no danger of carbon monoxide poisoning. Fits into most fireplace openings; available with trim and mantel surrounds. 519/650-3630. Dimplex North America Ltd., Cambridge, Ont. **CIRCLE 177**



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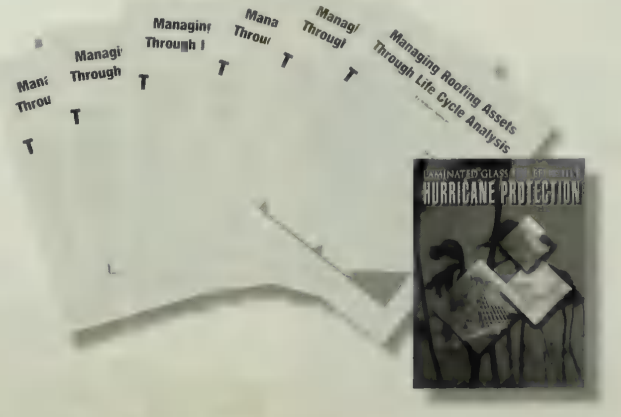
PRODUCTLITERATURE

Roof asset management
AlliedSignal Commercial Roofing Systems has prepared a four-page summary of roof asset management that describes how it is used by building owners, roofing consultants, and roofing materials manufacturers. "Managing Roofing Assets Through Life-Cycle Analysis" outlines the challenges facing the roofing industry in tracking roof life cycles. The report suggests that statistical data can be used in a meaningful fashion—to improve roofing materials and application methods, for example, or to monitor maintenance. Recently published in a peer-reviewed journal, the summary is now widely available as an Allied Signal reprint. 800/221-6490. AlliedSignal, Cary, N.C. **CIRCLE 178**

Hurricane protection
Saflex, a manufacturer of plastic interlayer, introduces a free brochure designed to provide information about the use of laminated glass in hurricane-prone areas. The brochure, "Laminated Glass for Effective Hurricane Protection," offers an in-depth look at the effects a hurricane can have on building and the importance of adequate protection for glazed openings. Saflex plastic interlayer is a polyvinyl butryal (PVB) used in manufacturing laminated glass. 800/24-TOUCH. Saflex, part of Solutia Inc., St. Louis, Mo.
CIRCLE 179

Boiler plant orientation
"Boiler Plant and Distribution System Optimization Manual," by Harry Taplin, P.E., has just been published by the Fairmont Press. Completely revised and edited, this guide to boilers details information on a systematic approach to improving boiler plant and distribution system efficiency. For this second edition, a new boiler plant orientation chapter has been added to the beginning of the book, giving an overview of the key boiler plant optimization issues and solution approaches. The author then takes the reader step-by-step through each of the technical, practical, and managerial aspects of boiler performance improvement. The softcover edition is priced at $74. Also available: "Energy and Environmental Visions for the New Millennium" (softcover $98) and "Performance Contracting: Expanding Horizons" (hardcover $82). 770/925-9388. The Fairmont Press, Lilburn, Ga. **CIRCLE 180**

Roofing video
Polycoat Systems, a distributor of the Dow Corning Seamless Silicone Roofing System, has a video offering background information on the weathering properties of silicones and discussing the Dow Corning system. The video reviews roofing installation and step-by-step procedures. 800/547-4004. Polycoat Systems, Inc., Hudson Falls, N. Y.
CIRCLE 181



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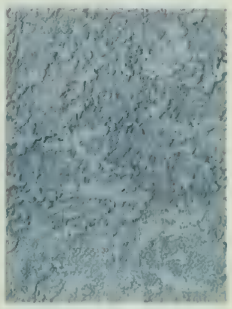
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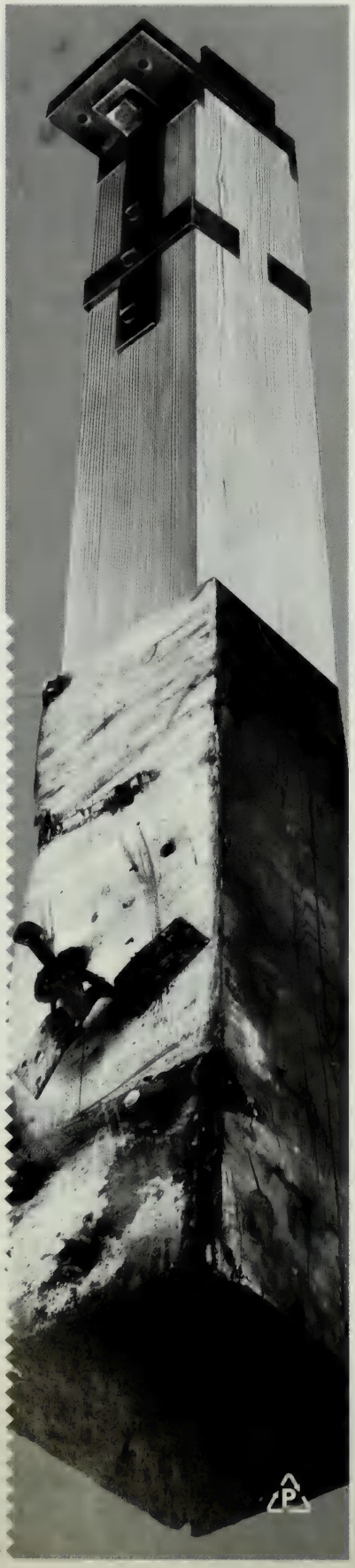
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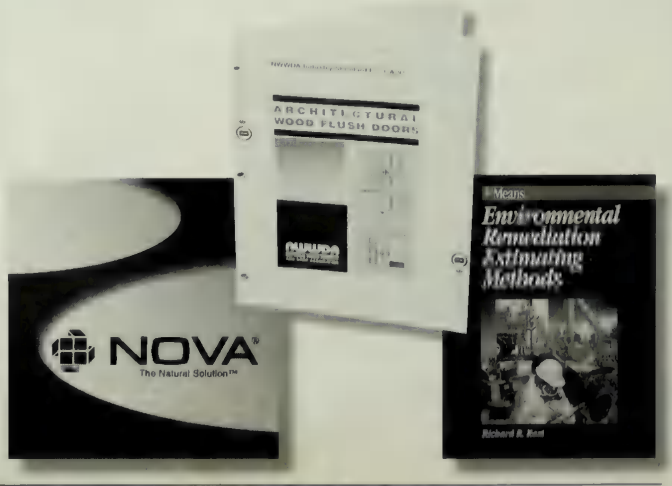
Recessed-monitor system
Nova Solutions has developed an interactive CD-ROM (free) about their recessed-monitor system, which provides a clear line of sight and maximizes workspace by locating all computer components below the work surface. Users view their computer monitors through a tempered-glass viewing port on the work surface. In doing so, the user looks at the screen at a downward angle that is natural for reading. Scientific evidence indicates that a downward gaze angle can reduce the eye and neck strain that are often caused by eye-level monitors. 800/730-NOVA. Nova Solutions Inc., Effingham, Ill. **CIRCLE 182**

Interactive CD-ROM
The National Wood Window and Door Association recently published the "I.S. 1-A-97 for Architectural Wood Flush Doors." In preparation for almost a year, the information on the CD-ROM reflects the latest industry materials and methods. One new feature is the recognition of structural composite lumber as a core material in 3-, 5-, and 7-ply constructions. Use of this material offers further protection against warping and telegraphing. The new standard also recognizes three types of door grades: premium, custom, and economy. 800/223-2301. National Wood Window and Door Association, Des Plaines, Ill. **CIRCLE 183**

Environmental remediation
Means Company's "Environmental Remediation Estimating Methods," a guide to comparing and predicting long-term costs of environmental remediation projects, was researched and written by Richard R. Rast, president of Delta Technologies Group, a Denver-based consulting firm specializing in cost- and time-management services for the environmental and construction industries. This 550-page book brings together detailed explanations and estimating guidelines on remediation protocols, from air sparging to UST closure, including installation and operational costs. $99.95. 800/334-3509. R. S. Means Company, Inc., Kingston, Mass. **CIRCLE 184**

RCMA news
The Roof Coatings Manufacturers Association (RCMA) has released its newest Tech-Note on the subject of "Recommendations for the Application of Aluminum Coatings." This useful publication provides recommendations for procedures for applying asphalt aluminum roof coatings. 301/348-2003. RCMA, Calverton, Md. **CIRCLE 185**

Concrete tech manual
The NCMA has developed the "Manual for Concrete Masonry Design and Construction" on CD-ROM. $90. 703/713-1900. National Concrete Masonry Association, Herndon, Va. **CIRCLE 185**



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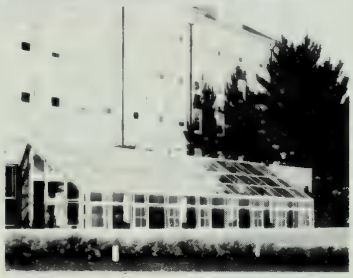
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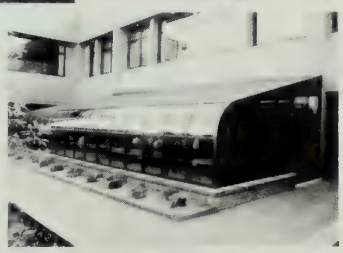
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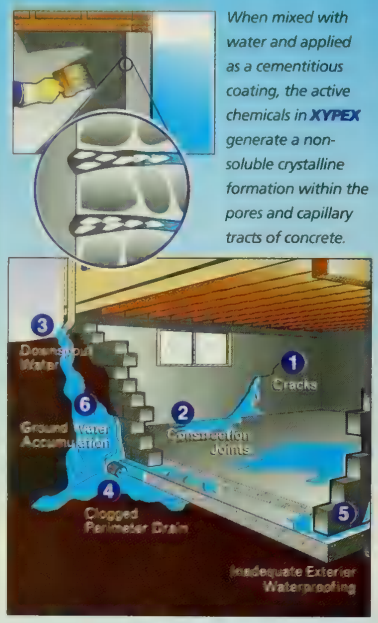
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significant commercial and residential architecture that uses laminated glass. Winners will be announced at the AIA national conference in May. A student ideas competition for the design of a courthouse is also being held. Write Stephanie Vierra at the AIA, 1735 New York Avenue, NW, Washington, D.C. 20006; call 202/626-7446; or E-mail vierras@aiamail.aia.org.

Van Alen Prize: The East River

Registration deadline: April 8; submission deadline: May 20

The 1998 Van Alen Prize in Public Architecture calls for entries that investigate, envision, and promote the design of a better public realm for New York City's East River. Entrants may propose design ideas from the vast scale of the entire district to the minute scale, as long as the proposal is conceived as having an impact on the East River's identity in the city. Students, studios, faculty, and professionals from anywhere in the world may enter. Contact the Van Alen Institute, 30 West 22nd Street, New York, N.Y. 10010; fax 212/366-5836; or E-mail vanalen@vanalen.org.

Vital Signs Student Competition

Submission deadline: June 15

The Vital Signs Project, administered through the University of California, Berkeley, announces its 1998 Student Case Study Competition. Undergraduate and graduate students in ACSA member schools of architecture and ABET member schools of architectural engineering in the United States, Canada, and Puerto Rico are asked to investigate, measure, evaluate, and report on the performance of existing buildings. Contact Gail Brager, Vital Signs, UC Berkeley, Berkeley, Calif. 94720; E-mail vitalsigns@ced.berkeley.edu or visit www.ced.berkeley.edu/cedr/vs/act/act_main.html.

Please submit information for exhibitions, conferences, and competitions at least six weeks prior to the magazine's publication date (i.e., February 15 for the April issue).

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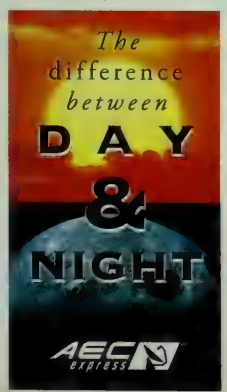
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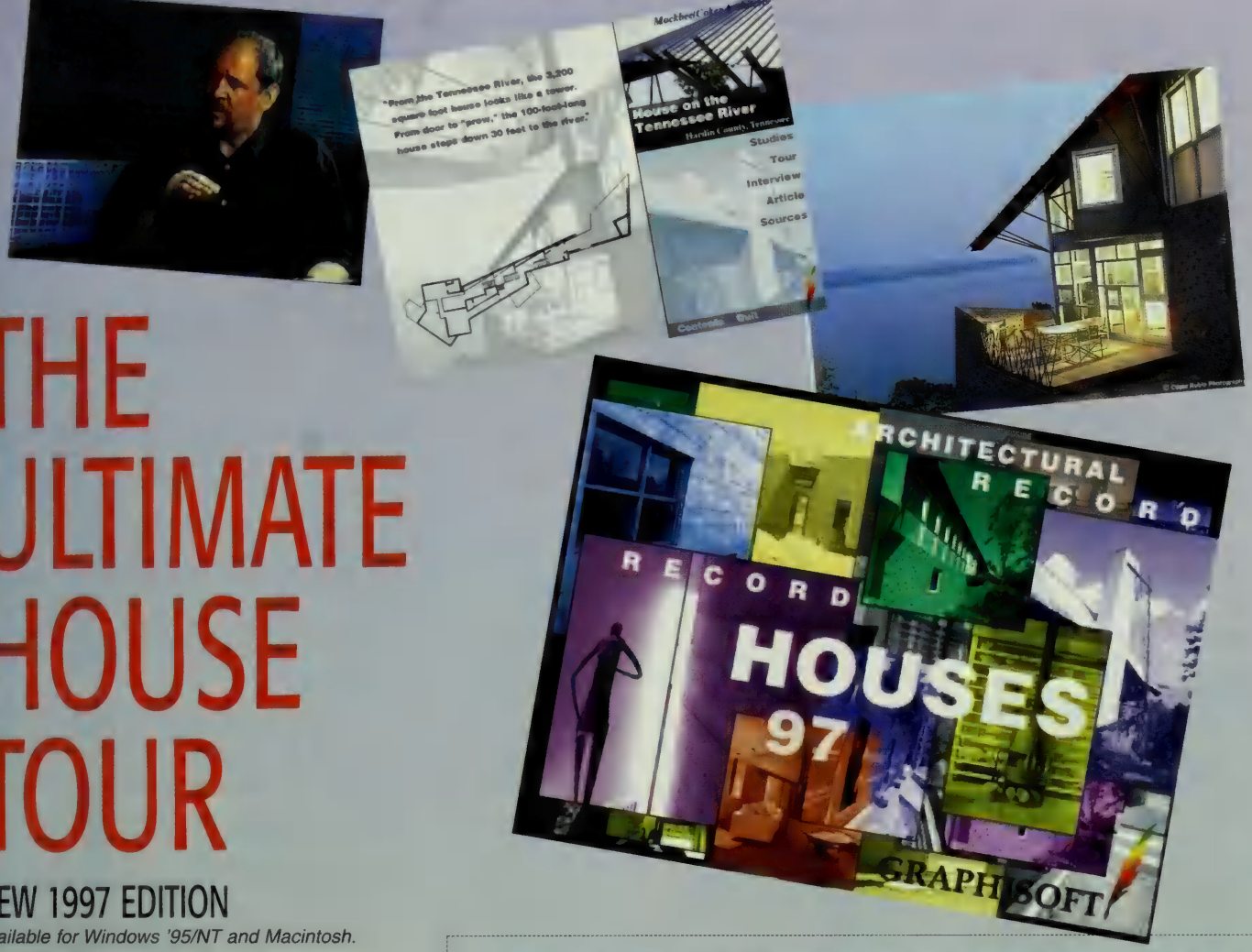
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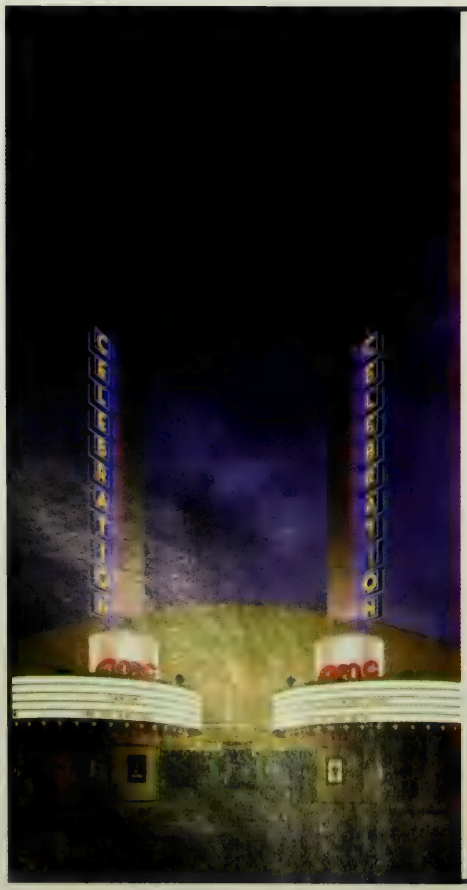
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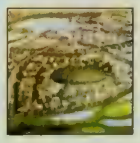
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

◆ Read the article "The Alchemy of a New Material" (pages 123–26) using the learning objectives provided to focus your study.

◆ Complete the questions below, then check your answers (top of page 172).

◆ Fill out the self-report form on page 172 and submit it to receive two AIA Learning Units.

—Mark Scher, AIA Director Professional Education Products and Services

Questions

1. Why is autoclaved aerated concrete (AAC) said to have an environmentally "sustainable" life cycle?

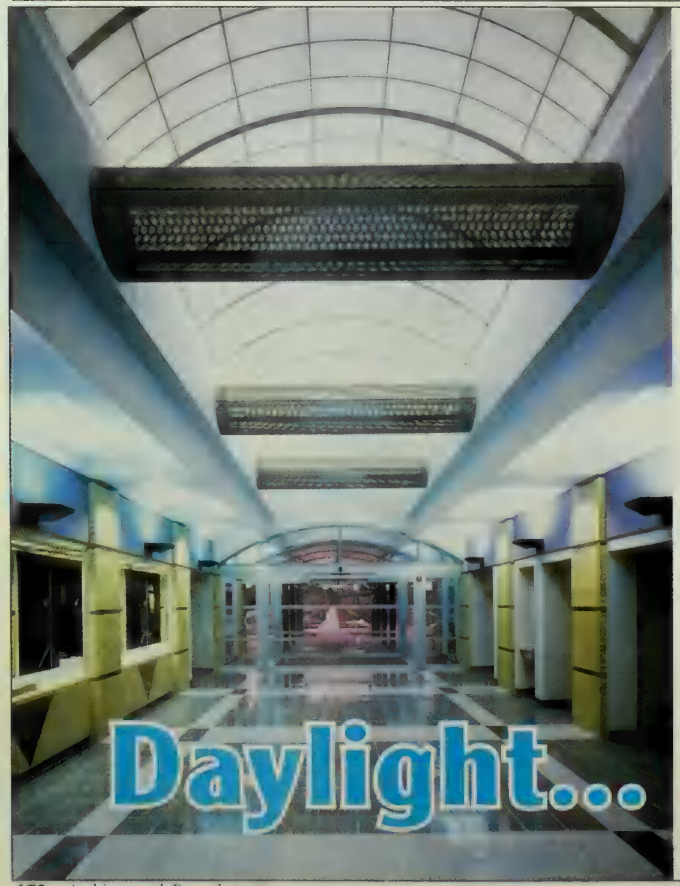
2. What is the quality of AAC as an insulator with regard to temperature, fire resistance, and acoustics?

3. List interior and exterior decorative possibilities offered by AAC.

4. What are some economic and design-detail considerations for using AAC in the United States and neighboring countries?

5. How does AAC compare with conventional concrete block as a building material?

6. Evaluate AAC's load-bearing performance and code implications.



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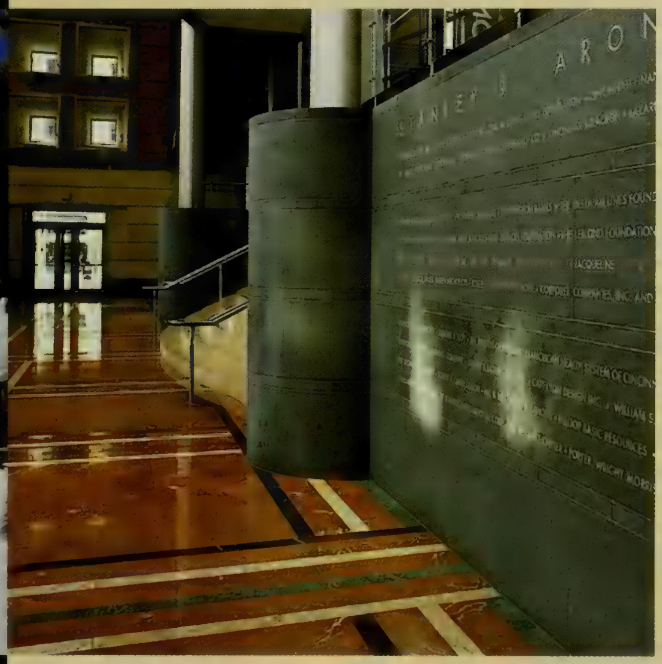
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Questions appear on page 170. To receive CES credits, fill in the self-report form below.

1. AAC is manufactured from and efficiently uses abundant raw materials. The manufacturing process is clean and free from waste. AAC can also be produced with fly ash recycled from coal-burning power plants. AAC is inert, nontoxic, and not a source of indoor air pollution. AAC panels can be reused or pulverized and used in the manufacture of new materials.

2. At R=1.25 per inch, AAC has less insulation value than glass fiber or insulation boards but significantly outperforms conventional concrete (R=0.1) or masonry. It provides solid insulation, without cold spots, and propagates fewer cracks that could allow air leakage. Its thermal inertia reduces fluctuations in a building's heating and cooling demands. In many temperate environments, an 8-inch-thick AAC wall provides more than the required thermal protection without additional insulation. AAC offers up to 4 hours of fire resistance with 4-inch wall panels, 8 hours with 8-inch panels (ASTM E-119, load-bearing). A 4-inch partition offers a sound transmission class (STC) of 41; thicker walls produce higher STC ratings.

3. An AAC surface can be incised to create reveals, signage, and graphics, and routed with surface patterns. Corners can be rasped to round edges, and arches cut with saws. Horizontal panels can be tapered to create a clapboardlike profile. Mortar can be used to adhere thin slabs or strips of AAC to an otherwise flat wall to build up quoins and other ornamentation. AAC can be carved, sculpted, and milled for bas-relief treatments and other designs. Exterior surfaces are typically plastered, finished with textured coatings, or given veneers of tile or thin brick. Interiors can be given a plaster or drywall finish, covered with heavy-bodied wall coverings, or painted. In industrial building interiors, the light color of AAC may be acceptable if left unfinished.

4. AAC is economically competitive with other building materials, is affordable to ship and handle, and installs easily without special equipment. Prefabrication shortens construction time, reducing labor and financing costs. Because it is considered a foreign building technology in the United States, there will be an adjustment period as AAC is tested and integrated into domestic construction practices. An architect detailing AAC for the first time must work closely with the AAC producer and with manufacturers of windows, flashing, and other materials that abut or tie into the AAC. Product performance and recommended details vary and should be verified with AAC producers and applicable codes.

5. AAC is lighter in weight, more thermally efficient, more dimensionally stable, and easier to ship and handle than other types of concrete materials. Its lighter weight allows larger blocks, resulting in walls that can be erected more rapidly while reducing the risk of back injuries among masons. AAC blocks are solid units with large areas of adhesion, and joints develop sufficient strength for walls to function monolithically, without reinforcing.

6. Depending on density, AAC provides 300–900 psi compressive strength, enough to support load-bearing buildings of three to four stories. Reinforced panels are capable of carrying typical floor, roof, and wind loads with spans as great as 20 feet. AAC has been used satisfactorily in seismically active and hurricane-prone regions around the world. NER evaluation reports on the materials are on file with the model code agencies. ASTM is in the final review process of a standard for AAC units, and the American Concrete Institute is drafting standards for engineering AAC.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only.)

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☐ "The Alchemy of a New Material" (pages 123–26)

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Quality Level for this article is 2. Completing the section earns a total of 2. Material resources used:
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I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

Signature **Date**

Send completed form to University of Oklahoma, Continuing Education, AIA/CES, Room B-4, 1700 Asp Avenue, Norman, OK 73072-6400. Fax 405/325-6965. For additional information, call 800/605-8229.



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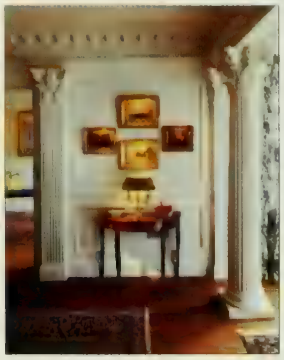
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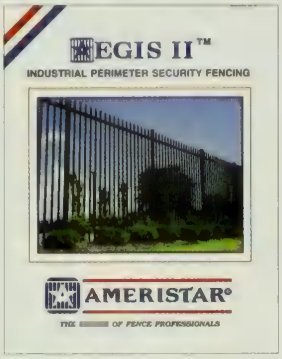


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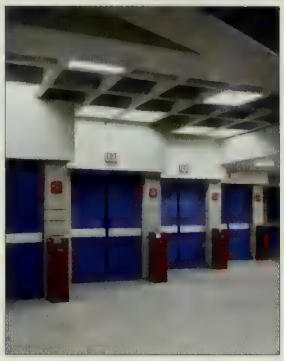


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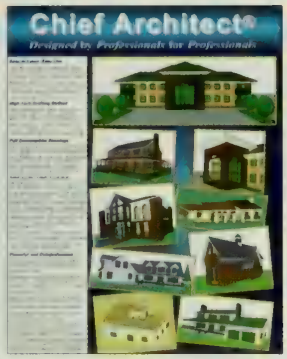


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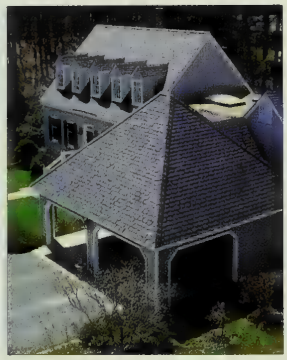


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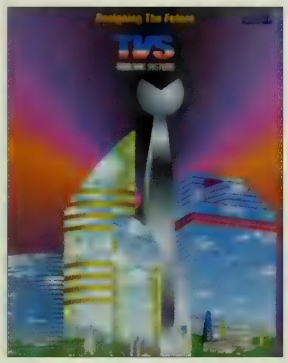


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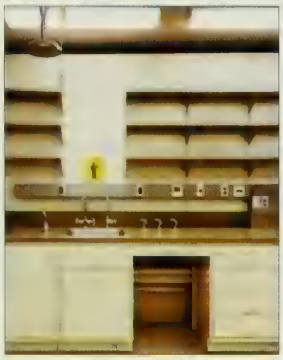


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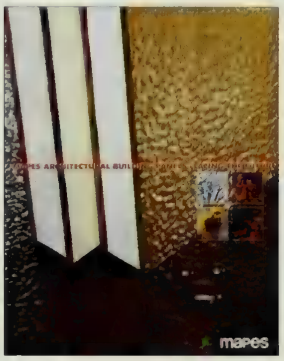


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New Pemko Full Line Catalog

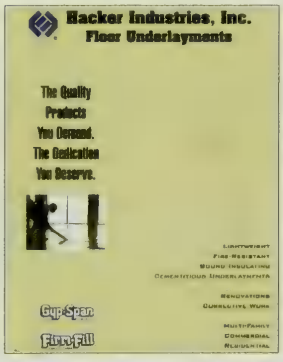


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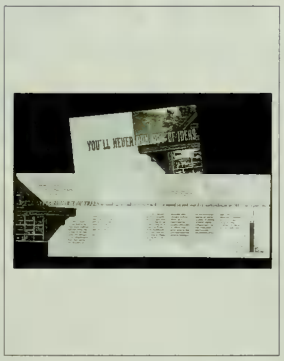


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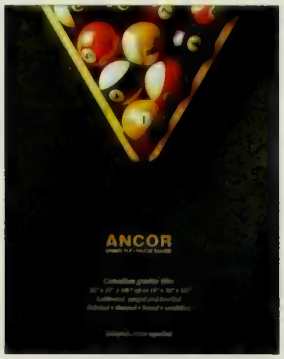


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Nominations or letters of application, along with a one-page statement expressing one's view of architectural education, resume, and names and addresses of three references should be forwarded to: Search Committee, Department of Architecture, Ball State University, Muncie, IN 47306. To obtain a one-page description of the position, contact Dr. Carol Flores (765-285-5879) or e-mail <cflores@wp.bsu.edu>. Review of applications begins February 16, 1998, and continues until the position is filled.

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OFFICIAL PROPOSAL

METROPOLITAN WASHINGTON AIRPORTS AUTHORITY
REQUEST FOR QUALIFICATIONS
NATIONAL AIRPORT TERMINAL A REHABILITATION

THE METROPOLITAN WASHINGTON AIRPORTS AUTHORITY (the Authority) is soliciting qualifications submittals from design teams interested in providing complete Architect/Engineer (A/E) services for the design of Terminal A Rehabilitation, Additions and Related Improvements at Washington National Airport.

The Authority intends to contract with the A/E team that best demonstrates a commitment to superior architectural and engineering design and management, and best meets the selection criteria for this project. It is the Authority's intent that the completed facility have a very high level of passenger service and design quality, equivalent to and complementing the adjacent new Terminal B/C.

Terminal A is listed in the National Register of Historic Places, and will be rehabilitated in accordance with the Secretary of the Interior's Standards for Rehabilitating Historic Buildings. The rehabilitated building, including planned extensions and related improvements, will be a 250,000 to 300,000 square foot, fully functional domestic airline terminal for seven (7) to nine (9) large jet aircraft and two (2) to three (3) regional carrier aircraft.

The total estimated construction cost of improvements to be designed under this contract is in the range of $50 to $100 million. The total pre-design and design services period is expected to begin in Fall 1998 and last approximately 2-1/2 years. The lead firm(s) and major subconsultants will be expected to have extensive, recent and relevant design and design management experience with similarly-sized airport passenger terminals, related airside and landside civil works, and complete rehabilitation of National Register public buildings.

The A/E services contract will include a requirement that there be a minimum of 30 percent (30%) Local Disadvantaged Business Enterprise (LDBE) participation. An LDBE is defined as a small business concern which is organized for profit and which is located within a 100 mile radius of Washington, D.C.'s zero mile marker. To qualify as a small business concern for purposes of this advertisement, a business entity's average annual gross receipts over the last 3 years must not exceed $8 million per year. The receipts of all affiliates shall be counted in the total of the business entity's gross receipts. The Authority strongly encourages the participation of minority and women owned businesses. For information on this program, or for additional information on small business standards pertaining to other specialty areas in this project, please call Mr Ronnie Edwards, Office of Equal Opportunity Programs, at 703-417-8625. **The Authority may, at its discretion, elect to hold a Special LDBE Outreach Open House in early January 1998 for potential prime offerors to meet with potential subconsultants.**

Responses to this Request For Qualifications (RFQ) must include the following: (1) statement of commitment to meeting the 30% LDBE participation requirement; (2) identification of the proposed LDBE firm(s) and their tasks; (3) documentation of LDBE certification (e.g. letter from the Equal Opportunity Programs Office or current certification number); and (4) LDBE certification application or indication that the firm has a pending LDBE certification application, for each proposed LDBE (waiver of this requirement shall be considered only under extreme extenuating circumstances). This information shall be provided as an attachment to your submittal. Failure to provide the required LDBE documentation will result in a finding of non-responsiveness, and the team's submittal will not be considered further.

Interested LDBE firms should contact the Authority's Business Opportunity Hotline at 1-800-833-0415 (outside the Metro area), or 703-417-8372 (Metro area) , or visit our website at http://www.MetWashAirports.com for current information on this and other upcoming projects.

An information package has been prepared that explains the project in more detail, as well as the Authority's A/E team selection criteria, selection process, design disciplines required, program objectives and Qualifications Submittal requirements. Copies must be requested in writing; verbal/telephone requests cannot be accepted. Please contact:

Metropolitan Washington Airports Authority
Procurement Operations Branch, MA-15
44 Canal Center Plaza, Suite 301
Alexandria, VA 22314
Attention: Ms. Linda Gragg, Contracting Officer
Phone: 703-417-8662
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Do not contact Airports Authority consultants, or Airports Authority personnel other than the Contracting Officer, regarding this solicitation.

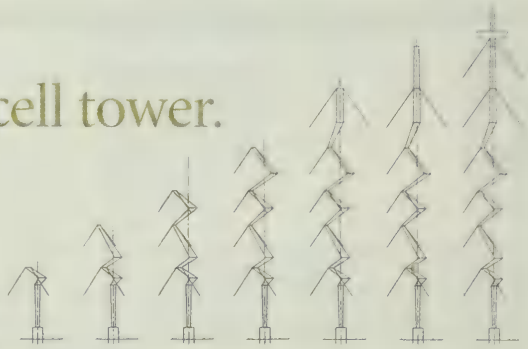
The due date for Qualifications Submittals is Wednesday, January 28, 1998 at 1:00 p.m.

No other general notification of this project will be made and no further action beyond submission of the information listed in the information package is required or encouraged. This is not a request for proposal.

The Authority is not an agency of the United States Government.

THE FUTURE Stealth design: When a cell tower is not just a cell tower.

BY JOAN BLATTERMAN



As digital cellular and personal communication systems compete for prime antenna sites and try to meet the objections of landowners and zoning groups, architects should become familiar with the design implications of these telecommunications technologies.

Digital cellular and personal communication system (PCS) transmissions are nonionizing types of radio waves sent at relatively low frequencies over short distances (one-half mile to five miles) in a line of sight from transmitter to receiver. In fact, digital cellular uses the old UHF spectrum that was used for 1950s TV broadcasting.

Architectural design has to deal with whiplike and flat-pan antennae that need to be placed at elevations of about 140 to 200 feet, just above the tops of the highest trees. For reasons of cost and zoning expediency, existing structures are preferred sites for antennae, and telecommunications firms have large real estate and design groups whose first priority is to obtain permission from property owners and local authorities to use office buildings or utility structures such as old incinerator chimneys, water tanks, and bridges as cell sites.

Facing opposition—even moratoriums—due to antenna-induced visual clutter, wireless vendors are turning to camouflage techniques to conceal their devices. The receiving and transmitting units range in size and configuration, but tend to be narrow shapes only 6½ inches wide by about 4 feet long, or flat-pan arrays of about a foot wide and 6 feet high. An antenna may be placed on the exterior of the parapet wall on each of a building's four sides; it may then be painted to match the wall or stuccoed to blend with an EIFS facade.

As many as 70 percent of the cellular/PCS sites in a given geographic area may be in existing structures, and some of the concealment techniques are ingenious. For example, cellular antennae in a church bell tower (a much-sought-after spot) can be hidden behind louvers made of radio-frequency-transparent fiberglass that replicate the copper originals.

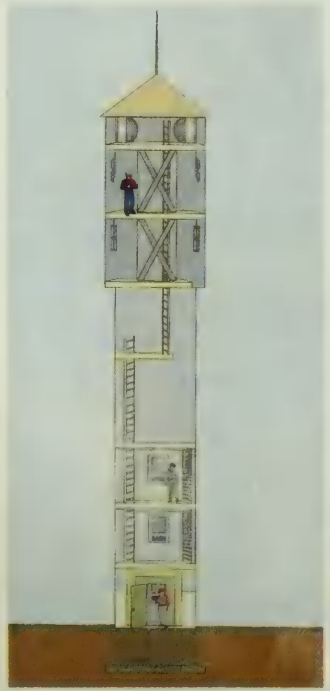
But the antennae are only the tip of the cellular iceberg: each site needs an enclosure of about 12 by 15 by 10 feet to protect the transmission and receiving equipment (which costs in the half-million-dollar range). These units can be placed apart from the antennae, in a prefab metal building at the base of the tower, or even underground in a waterproof vault if necessary. Where the size and load capacity of a roof permits (equipment can weigh over 10,000 pounds), enclosures can be placed up top as well; a pad or subframing may be needed to spread the weight to the columns. But where existing structures are not available or appropriate for cellular/PCS antenna sites, wireless providers erect freestanding towers, which the public tends to hate.

To disguise the inherently obtrusive nature of cellular/PCS towers and address zoning concerns, firms such as AirTouch and Bell Atlantic Mobile are adopting a stealth approach, designing towers with a more contextual appearance: as forage silos in dairy country or faux white pines near a forest preserve.

Shown here is one of the newest of these more aesthetically pleasing sites, a 144-foot "bell tower" on the grounds of a convent in Mendham, New Jersey. Designed by engineers Edwards and Kelcey, Inc., for Bell Atlantic Mobile, it incorporates architectural details and materials of nearby historic structures. The camouflage tower is constructed of stacked prefabricated modules; the cast-in-place foundation has a relatively compact footprint. The transmission equipment is placed in precast-concrete modules that form the bottom third of the tower; no auxiliary enclosures or guy wires are needed. The middle section is hollow, holding the stair to the top section. Here the cellular and PCS antennae are enclosed completely with decorative FRP panels. Bell Atlantic is sharing the location with other wireless carriers, reducing the need for other antenna sites in the area.

For more on wireless communication systems, see the Cellular Telephone Industry Association's Web site at www.wow-com.com. ■





A Romanesque facade camouflages the Mendham Telecommunications Facility (left), owned by Bell Atlantic Mobile. Architect Gunnar Birkerts used a "hide in plain sight" approach, making an AirTough Cellular tower into a work of art (above).

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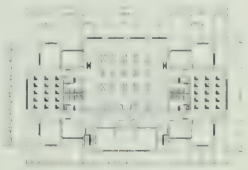
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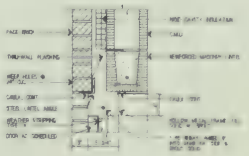
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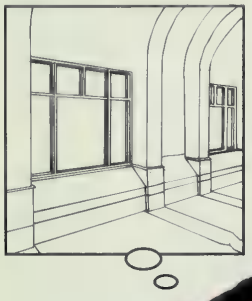
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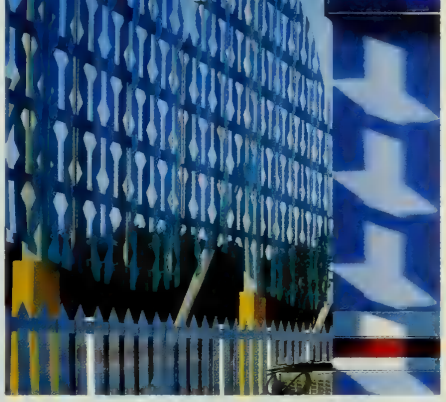
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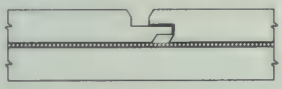


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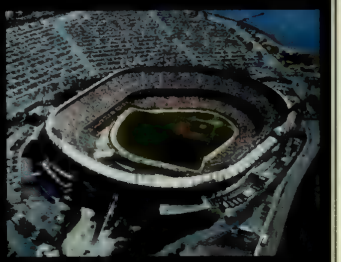
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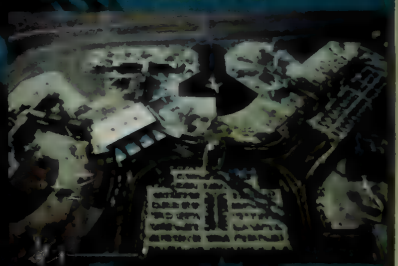
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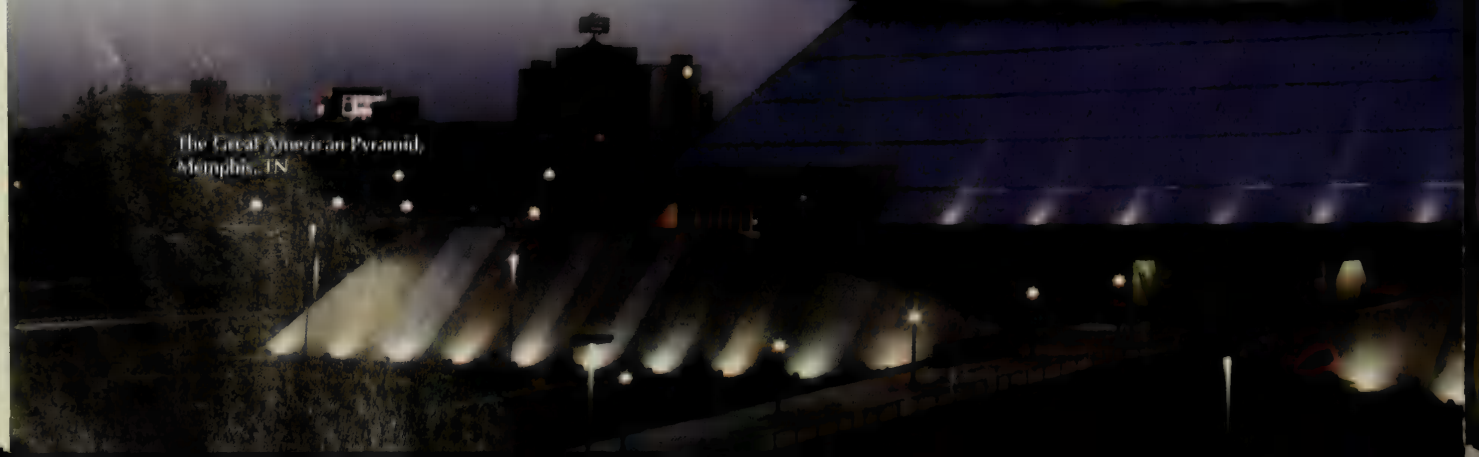
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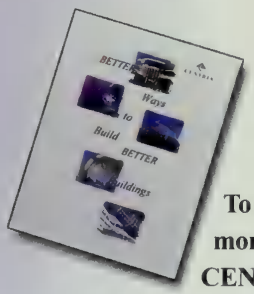
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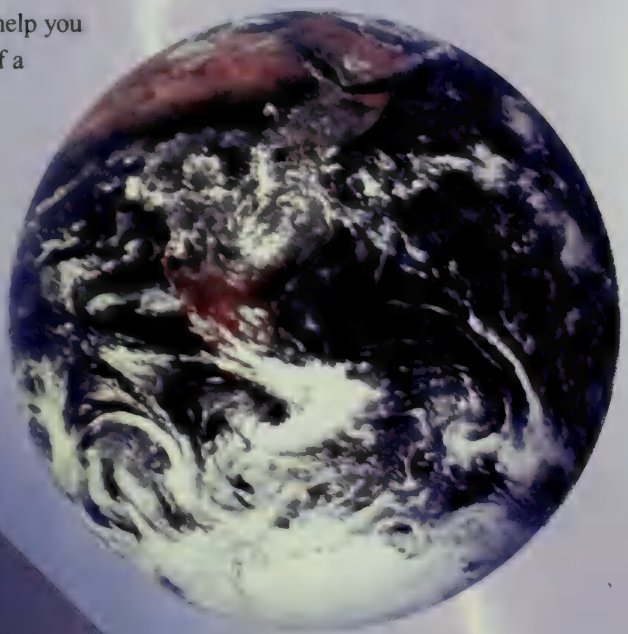


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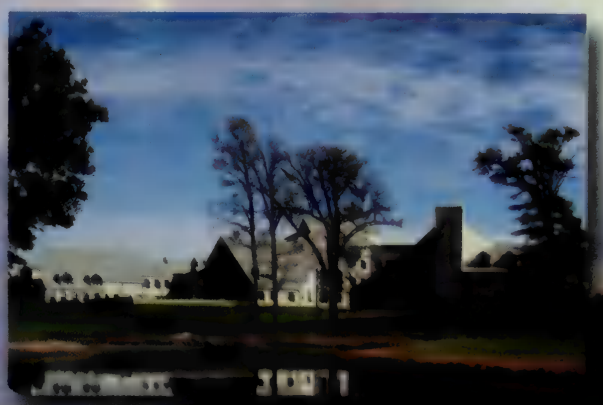


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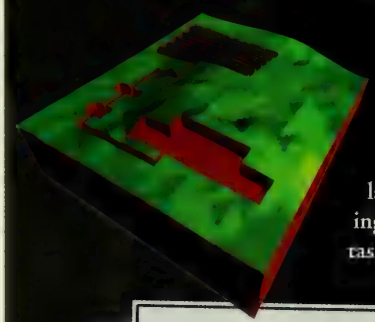
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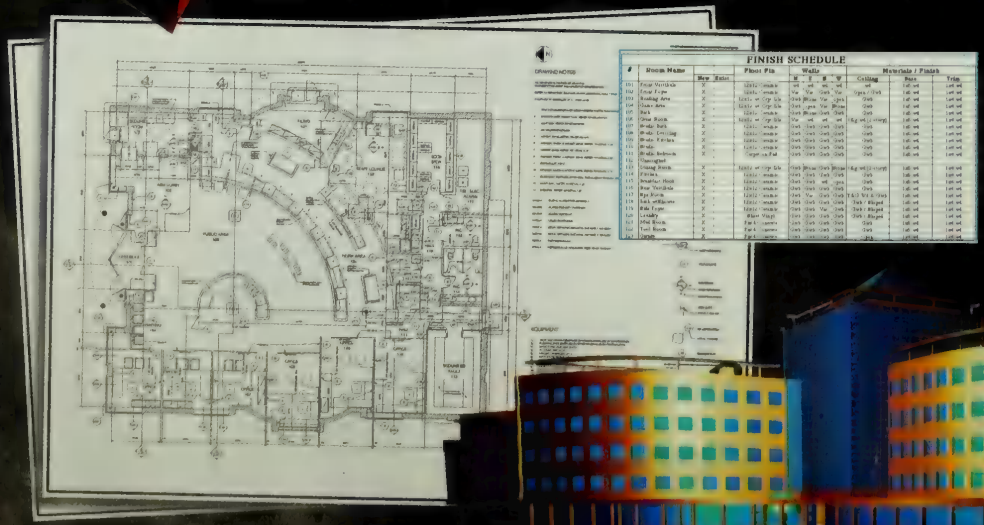
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EDITORIAL

A Building Lasts a Lifetime

BY ROBERT A. IVY, FAIA

At the height of the Christmas season in 1997, the sky rained bricks on a busy block in midtown Manhattan. It was amazing that no one was killed on Madison Avenue, which had to be closed off, denying hungry shoppers the opportunity to spend and retailers significant revenue. Investigation pointed to construction flaws: somewhere along the line, masonry ties had been omitted from certain courses of brick. Invasive moisture or thermal shifts had taken their toll, and at a given moment, the loosened bricks broke free.

Although the New York story is an anomaly, subject to an ongoing investigation and probable litigation, it dramatizes something that architects and their clients sometimes take for granted: public health, safety, and welfare remain fundamental, defining characteristics of the architectural profession. When properly executed according to plans and specifications (which the New York building was not), structural frames are expected to stand up; details are intended to hold, despite an array of stresses.

Nature is unforgiving. However, her physical laws, while nondiscriminatory and universal, are rational. We can understand those laws and although we cannot control them, we can build in harmony with them. Cases of extreme stress can prove instructive. Following the 1994 Northridge earthquake in Southern California, architects and engineers discovered that steel, which had been widely understood as strong enough to withstand earthquakes, actually tore under the strains. Several new methods of softening the inevitable forces resulted.

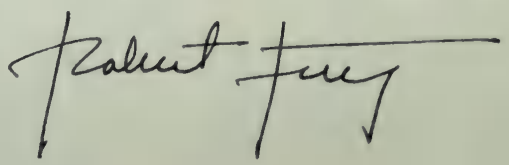
There is a tendency to assign the onus of building safety to others, such as engineers, who are perceived as experts. Architects are aesthetes, after all, or businesspeople, the argument goes. Structural engineers perform the calculations on which a building's integrity rests. Electrical engineers devise the systems that monitor each building's security and light its exit corridors. Mechanical engineers are responsible for fire-suppression systems. Code consultants know the law and often help frame the governing regulations.

No one, however, is in a better position to render thoughtful judgment about building safety than the architect. The architect's position on the building team is unique, offering perspective, an ability to compare systems and offer advice on appropriateness at varying levels of decision making. While legal liability rests with each discipline, architects may, in fact, shape a building's material safety.

More important, they organize the flow of people and goods, lay out the floors for habitation or industry and for safe entry and exit, and devise strategies for healthful light and ventilation. Code consultants do not encompass this holistic understanding; engineers, locked within a single discipline, do not benefit from such synthetic vision. Interior designers, concerned primarily with inside surfaces and movable objects, cannot alter a poorly conceived dead-end corridor.

The approaching century promises revised building codes, both prescriptive and performance-based, with the hope of a single, national resource that all parties can point to and use. Unfortunately, no written document can make up for poor advice: no subsequent decision can reverse the problems faced by a building erected in a region plagued by hurricanes, for example, or along a well-known seismic fault; no legal formula or insurance policy can substitute for prudence when a builder wants more structure for less money.

Architects propose that the buildings we erect should enhance our health, at every scale; safety is our charge. A building lasts a lifetime, and our lives are growing longer. The skies should not be raining bricks.



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CIRCLE 8 ON INQUIRY CARD

LETTERS

Competitions and the public
David Dillion's otherwise comprehensive article on architectural competitions [November 1997, pages 62–67] did not include one important issue: public accountability. Well-run competitions offer a much more sensible and public means of selecting a project and an architect than the various conventional political processes that often carry the taint of favoritism and back-room deals and result in disappointing architecture.

In San Antonio, most recent state- and locally funded projects not awarded by competition have ranged from laughably mediocre at best to dysfunctional at worst. In contrast, two recent competition-winning projects are among the best buildings constructed in this city in years, if not decades.

Firms genuinely interested in good design have nothing to fear from participating in well-run and adequately funded competitions. When the awarding of projects is not open to public scrutiny, too often the process seems skewed toward firms with the best public relations personnel, at the expense of architectural merit as a serious consideration. As a tax-paying citizen, I demand that my tax dollars go to quality design, rather than into the pockets of well-connected lobbyists representing mediocre design talent.
—Darryl Ohlenbusch
San Antonio, Tex.

Niemeyer and the Modernists
Oscar Niemeyer is disingenuous when he says: "The Modernists acted as if architecture consists only of rational processes and straight lines" [December 1997, page 35]. Spatial freedom was the driving impulse of Modernism; the use of straight lines was a reasonable and practical response to the realities and economics of production and construction processes of its time.
—Paddy Lynch
New York City

Inspired architecture
It is interesting to learn that Charles Price, a graduate of Colorado College, intends to bring inspired architecture to the college's planned science building and new arts complex [December 1997, page 33]. Price, according to your article, "would like to give the commissions to world-class architects."

Some of the credit for what author David Hill calls "less than inspired" buildings on the college's campus rests in the hands of architects who, I'm sure, the college as well as the architectural community consider to be "world-class": Skidmore, Owings & Merrill designed Tutt Library; Caudill, Rowlett & Scott designed Olin Science Hall and Boettcher Health Center; Edward Larrabee Barnes designed Packard Hall for Music and Art.

I hope that Price and the college's board of trustees realize that giving the commissions to world-class architects or to a nationally renowned architect may not result in inspired architecture.
—Charles Campbell, AIA
Colorado Springs, Colo.

Architecture for the long term
The difference between Frank Gehry's Guggenheim in Bilbao [October 1997, pages 74–87] and Richard Meier's Getty in Los Angeles [November 1997, pages 72–107] is the difference between presenting a city with something dubious scraped from the bottom of an architect's shoe and presenting a spectacular jewel from the heart of the architect's imagination.

I am sure that both buildings will contribute to the cultural life of their respective cities, but only Meier's will be considered of lasting value a century from now. It is a shame that Gehry has turned his back on architecture in favor of self-indulgent folly masquerading as art.
—D. S. Locicero
San Francisco, Calif.

More on becoming an architect
Robert L. Morgan, the author of "Becoming an Architect: Motivation to Fail" [November 1997, page 28], needs to set aside the image of Howard Roark and take a more objective view of his profession. To whom should practitioners 20, 30, or 40 years his senior assign the "unrewarding work"? The road to becoming a professional architect is supposed to be tough, which is why the ones who survive are the best.

Clearly, Morgan does not understand that his education is in its infancy. College did not make him an expert; he will not have expertise for many years. High wages will come with experience, increased abilities, and personal risk. Let the hardships of the architectural life motivate you to excel- lence. How you face those hardships will show us the stuff you are made of.
—Randy W. Bright, AIA
Tulsa, Okla.

I read Morgan's article with great interest and some sorrow. The architecture schools are failing to provide realistic learning skills—skills that would make young people more valuable to firms.

I am trying to address this problem by creating a specifications-writing class, which would help students learn how to draw and detail more realistically, understand concrete and structural steel classes more thoroughly, and offer many other advantages.
—Jerry D. Wright, AIA, CSI
Gittels Associates
Southfield, Mich.

It is true that architectural interns incur hefty school expenses, often work too much for too little, and consummate this experience with a costly professional exam. But it doesn't have to be this way, and we don't have to wait for educators and practitioners to break their old habits before things can get better. Every intern has the ability to enjoy rewarding, valuable work experience and reap moderate wages by finding a good firm and increasing his or her value within that firm.

In today's healthy economy, interns have more leverage than we think we do. A good firm will encourage its interns to use the intern development program to expand their professional experience; many firms offer assistance on completion of the A.R.E. If your firm does not operate this way, take the time to explain to your employer how the firm could benefit from assisting you.

I share Morgan's concern about college tuition, hostility in the studio, and the subjectivity of evaluations, but I don't believe that these problems are unique to architecture.
—Casey J. Wyckoff
LSW Architects
Vancouver, Wash.

Building to code
I find it interesting that RECORD, the publication representing the AIA, should publish work that does not conform to code, such as the courtyard stairway in Dean/Wolf's loft [September 1997, page 109]. As design professionals, we must remember that "good and innovative" design is not only aesthetically pleasing but also functional. A floating stairway that does not include required life/safety elements, such as a handrail, should not be published as an example of good design.
—Gary J. Ahern, AIA
Menlo Park, Calif.

Where is the third world?
I love RECORD and read it with interest. However, I am critical of the fact that it lacks anything and everything on "third world" architecture.
—Murat Soygenis, AIA
Istanbul

Corrections
On page 139 of the January 1998 issue, the architect Tim Andreas should have been credited as working independently on the master bath remodeling project in Hollywood, California. ■

RECORD may edit letters for grammar, style, and space availability, taking care not to change the author's meaning. Letters sent by post or electronic mail must include the sender's full name and address.

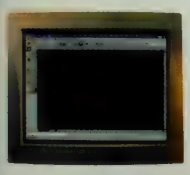
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SPEAK OUT Adaptive reuse deserves its own category in the AIA Awards.

MALCOLM W. HOLZMAN



Malcolm Holzman is a principal with Hardy Holzman Pfeiffer Associates, in New York City. He served as chairperson of the jury for the 1997 AIA Honor Awards for Architecture.

Much like the Oscars, Emmys, and Grammys, the annual AIA Honor Awards present the best projects built by American architects as determined by a distinguished peer group. Although the process has been disparaged from time to time, it is one of the few significant measures of excellence for the profession and has been so for 48 years. Therefore, it is important that the awards system reflect today's architecture.

Before the millennium, the AIA should consider dividing the current award for architecture into two categories. There has been, and continues to be, an increasing number of culturally and historically important buildings and other sound structures that are being adapted and updated for continued use. The profession should recognize the distinction between new buildings and reuse projects and acknowledge its importance by creating two separate classifications. The same standards of judgment cannot apply to both types of building projects.

Jury members for the AIA awards are normally confronted with a stack of submissions that includes several project types—residences, hotels, schools, hospitals, factories. Entrants can submit their projects for consideration in one of two categories: design resolution or design advancement. Entries may be further considered for "technical, societal, [or] environmental advancement [or] preservation/restoration." Under the current system, only level of excellence and building type now distinguishes one project from another. But there is a big difference between existing buildings and new ones, and it is significant enough to warrant a separate awards category.

Because of current submission requirements, jurors cannot adequately review reuse projects. To fairly consider an older building for an award, its original life must be documented and described. Why it was originally conceived and built, how it was subsequently used and modified over time, and its condition prior to restoration and reuse are all important factors. How the structure has been restored, altered, or extended must be conveyed. In many instances, the project may need to be evaluated by the Secretary of the Interior's standards for rehabilitation and guidelines for rehabilitating historic buildings. All these topics and others must be succinctly illustrated. A jury must act quickly but reasonably based on a sound understanding of the projects' general characteristics and specific areas of excellence. The present AIA system does not allow for this kind of scrutiny.

To function as a useful environment, an existing structure requires special expertise from the professionals adapting it. These skills range from a knowledge of history to the special application and installation of materials. It also necessitates the unique ability to understand the design intentions of a previous architect and to allow these to influence, in part, the development of a reuse project.

Changes in the architectural profession validate revising the awards system: the quantity of projects involving older buildings during the past two decades has increased significantly. In fact, several architecture firms across the country have dedicated their practice exclusively to reuse and preservation. And consultants with particular areas of historic expertise are in demand nationwide by architects undertaking assignments that involve older structures. There is even an accepted distinction among those in the field as to the fees commanded to design projects of this kind.

Moreover, our schools of architecture have responded to the need for curricula specifically designed for this area of architecture. Separate historic preservation programs are now flourishing at institutions around the country.

As America's vast stock of existing buildings continues to grow, it follows that more and more construction projects will start with existing structures. Preservation is meritorious. Currently, the AIA awards program does not provide an adequate way to honor these endeavors. This should change. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*



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CIRCLE 9 ON INQUIRY CARD

MENTORS Addressing a common dilemma: how to balance firm size, staff experience, and quantity of work.

Susan L. Harris, Ph.D., a member of the leadership faculty at the Advanced Management Institute for Architecture and Engineering in San Francisco, has a broad-based consulting practice that has worked with numerous A&E firms over the last seven years.



ARCHITECTURAL RECORD asked Susan Harris to answer a question that often confounds architects. Her response follows.

The question I hear most often from architects in this boom period is, "How do I effectively work with inexperienced new staff members when clients demand that everything be done fast and well?"

To meet project demands, many firms staff up quickly, hiring less experienced people because competition for more experienced people is pushing salaries to a level that is perceived to be unsupportable for equity as well as profitability. Inexperienced new hires then require more support than overstressed managers feel they can provide. Quality suffers—not only in documentation and client satisfaction but in design itself.

The question is serious indeed. Whether an inexperienced person performs unsatisfactory work or a manager ends up doing too much of the work, neither quality nor employee development is served. New staff may either experience inefficient and ego-damaging training or a lack of appropriate learning opportunities. Managers live in a continuous cycle of overwork that may eventually motivate them to leave the firm.

Coaching and competencies

The first thing to establish in addressing this problem is whether your more senior staff members understand that coaching is their job. Many architects feel that anything other than a directly billable task is not "real work." Changing this attitude may be a long-term effort, but your firm's future health depends on it.

The second consideration is whether your senior staff understands what coaching is. It is not the kind of one-way directing that pervades the profession. Rather, coaching is dialogue that brings to the surface what individuals already know as well as what they need, then expands into feedback and advice. This builds on existing competencies to enhance confidence and encourage appropriate growth.

Yes, this process takes time. But it simultaneously assures quality and effectively develops staff, both of which save significant time in the long run.

The third thing to consider is whether, in your rush to hire new staff, you have been clear and rigorous enough about the skills you require. When a new employee's competencies are thin, even the best coaching will fall short of producing the desired results. You are probably better off not hiring at all than hiring someone who does not have the key abilities you need.

Staff size affects jobs

This brings me to the fundamental dynamic underlying the question. The number of qualified staff members you have—or can realistically hire quickly—ought to act as a limiting factor in your decision-making about the work you accept.

Up to a point, stretching is a good idea: we don't know what we're capable of until we try. But if managers are coaching effectively and still finding themselves overworked and dealing with quality problems, your hiring may not have been as good as you thought. Or you may have exhausted the talent available in your area.

Why do so many firms fail to respond to this natural limit by slowing the influx of work?

Though the industry has always been subject to the boom-and-bust cycle, most firms have not fully built this factor into their strategic thinking. Lean times are often so painful that in fat times no one can bear to turn down work, much less be selective.

Overcoming the fear of not having enough work requires realizing that slippage in quality and client relationships causes damage that may take years, even decades, to repair. When we balance our work with our resources, we naturally regenerate—both at the individual and the organizational level.

We optimize creativity, which in turns builds a compelling confidence that becomes irresistible to clients and talent alike. Firms with this confidence are best equipped to thrive through the lean times. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*



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CIRCLE 10 ON INQUIRY CARD

PULSE RECORD readers were asked: Are today's critics in touch with the issues affecting architects and architecture?

NO: 60%

No: Most critics do not understand the complexity of producing a building, and they do not recognize the problems associated with a difficult client. Where is Ada Louise Huxtable?
—Arthur Rosenblatt, FAIA
New York City

No: Architecture criticism has increasingly become a vehicle to express personal biases rather than a mode to inform the public and the profession in an intelligent and accurate manner.

Recently, our firm completed a project that was reviewed by an architecture critic for a major publication. The critic made a number of personal observations—no cause for alarm. However, it was evident from his review that he did not understand the fundamental purpose of the building and its specialized needs. Subjective dispositions aside, an architecture critic should at least understand the building that he or she is reviewing before passing judgment on it. In the story on our building, the critic never called the owner or the architect to discuss the project or request a tour. Instead, the critic wrote carelessly about the project and consequently made comments that stood out as uninformed observations rather than thought-provoking criticism.

There are, of course, some outspoken critics who review projects with a professional, if not an objective eye. In our increasingly media-drenched society, the eagerness to be published has overtaken the need to write responsibly.
—Tomoo Fujikawa
Fujikawa Johnson & Associates
Chicago, Ill.

YES: 40%

Yes: Criticism is a link to our subjective/intuitive side and it is paramount that this connection be understood. Criticism today is often more concerned with the analysis of trends than with the real evaluation of how well a design solves a particular set of problems.

I would like to see criticism based on a wider historical perspective—on references beyond those commonly made to Frank Gehry, Peter Eisenman, or Steven Holl. For example, it would be interesting to critique Alvar Aalto's integration of International Modernism into the landscape of Finland and its culture.
—Sven Erik Alstrom, AIA
ALstrom Group P.C.
Aspen, Colo.

Yes: Architectural criticism, like architecture, inevitably reflects the zietgeist. Just as there are factions within the practice of architecture, there will be forces and lines drawn within the critical realm. This is neither cynicism nor positivism.

The real question here is the ultimate purpose of criticism. It can be instructive, constructive, or destructive. And it can be ugly when it becomes personal. Criticism must remain an autonomous embattled discipline. Occasional provincialism, favoritism, esoterica, and outright self-promotion can be maddening. Bur critics who can objectively begin with the big picture, avoid blinders, and have a semblance of wit will be appreciated regardless. Ultimately, critics and practitioners will each march to the beat of a different drummer.
—Jeffrey Scott Stenfors
SPF: Architects
Venice, Calif.

This Month's Question

Should the AIA charge its members $50 a year to support the organization's national advertising campaign?

AIA members have identified public awareness of the value of architecture as a high priority. Currently the AIA is seeking funding for an ambitious $3.5 million national advertising campaign for broadcast and print media. (It now spends $1.5 million for a print advertising campaign aimed at the business community.) In order to pay for this effort, each member will be charged $50 dollars a year, with a reassessment in 2001. The issue has provoked widespread debate.

Should the AIA charge its members $50 a year to support the organization's national advertising campaign? ☐ Yes ☐ No

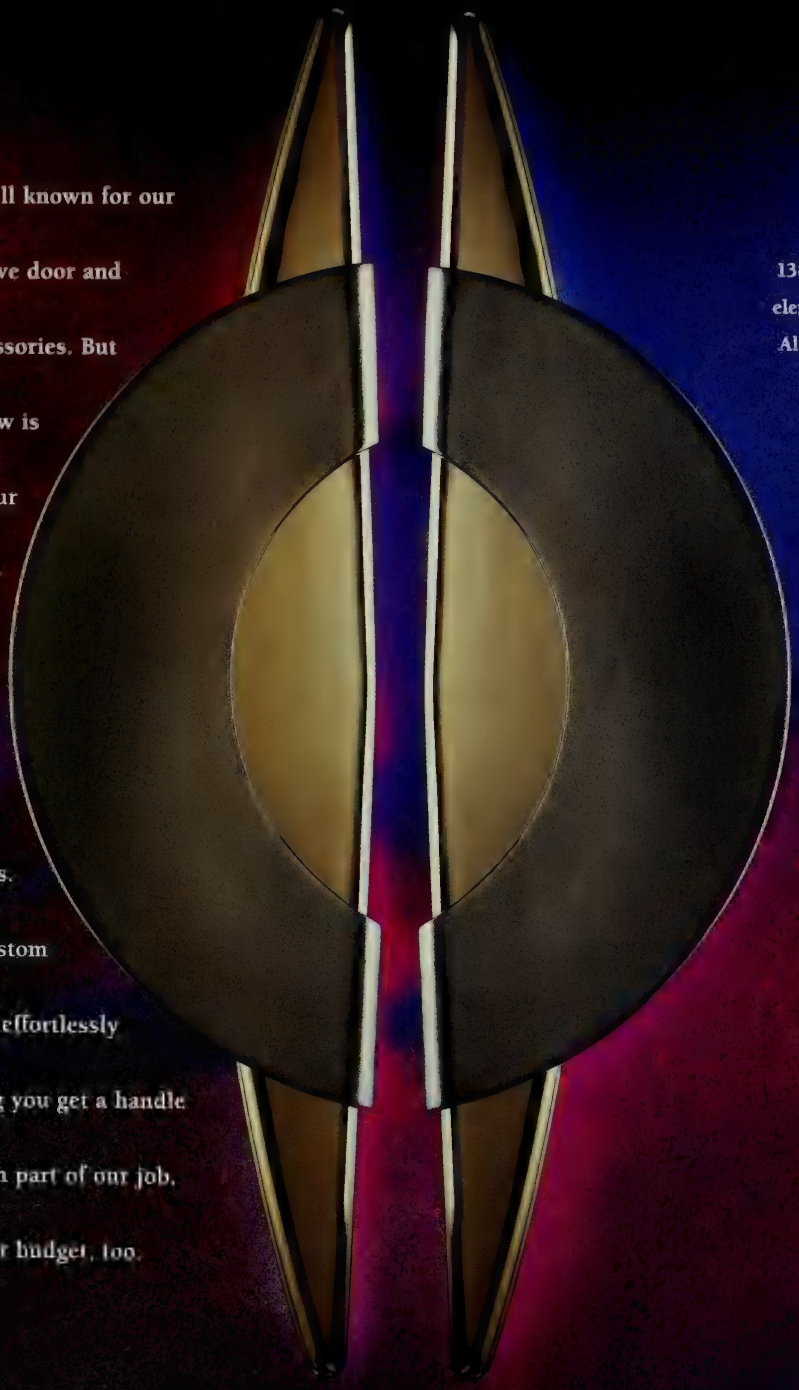
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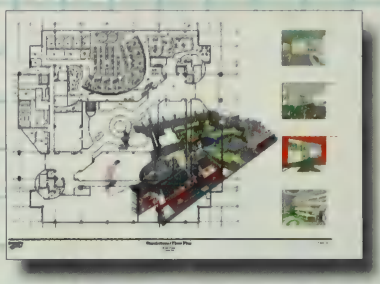
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CIRCLE 14 ON INQUIRY CARD

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RECORD NEWS



GM MOVES TO RENAISSANCE CENTER, POWERING DETROIT'S BUILDING BOOM

Detroit is booming. An open-air baseball park, a domed football stadium, and three casinos are in the works. And the General Motors Corporation is a central force in the revival with its renovation of the 5.5-million-square-foot Renaissance Center near downtown.

GM, currently located in a 1920 Albert Kahn building a few miles from the Renaissance Center, had considered leaving Detroit. Now the company plans to create its global headquarters in the tallest buildings on the Detroit skyline.

"We made a decision that Detroit is the right place for us—it's been our home for 76 years," says Matthew Cullen, general manager of GM's Enterprise Activities Group. "We developed the Renaissance Center scenario ourselves and committed to buying it before even approaching the city of Detroit."

Ever since the complex of four 39-story towers and a 73-story hotel opened in 1976, critics have complained about the design, by John Portman. For the renovation GM hired Chicago-based Skidmore, Owings & Merrill as the master architect, engineer, and planner to fix the problems. GM spokesman Peter Rowe estimates the renovation will cost "hundreds of millions but less than a billion dollars." A Detroit firm, Ghafari Associates, is the production architect/engineer.

"The biggest challenge is reintegrating the facility into the city so it's accessible to employees and visitors from around the world," says Richard F. Tomlinson, AIA, SOM project partner. At the center's entrance, two 35-foot berms form a barrier that cuts the building off from the city. To make the entry more inviting, GM will pay a hefty $30 to $50 million to remove the berms and relocate the heating and air-conditioning systems housed in them, Rowe says. In their place will be a glass-and-stainless-steel entry and a landscaped plaza.

Two new features will also help orient people within the complex: a five-story winter garden with shops and restaurants and a circulation ring connecting the towers. The winter garden will open up to a riverfront promenade with outdoor cafés and bicycle paths—all on 24 acres of land that GM is developing with the city. Additional features of the complex include a GM museum, GM's university, and a food court.

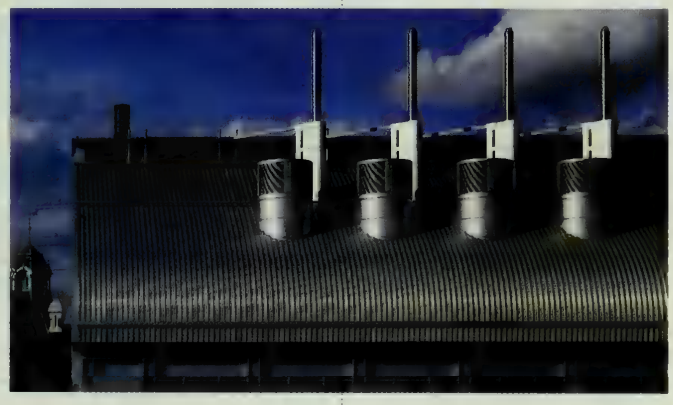
The renovation will be completed in three to five years. When it is done, GM's headquarters will contain operations that had been scattered throughout southeastern Michigan. Once GM has vacated the Kahn building, city government offices will move in. *Susan R. Bleznick*

YOUNG ENGLISH DUO EXPLORES THE IMPORTANCE OF BEING MODEST

The Abbey Mills pumping station in London (below), the most visible sign of a major civil engineering project and a vital improvement to the city's infrastructure, is the latest work by the young English architects Allies and Morrison. Although it is a modest industrial building, the pumping station has the detailed precision of a fine metal casting. At night it becomes a delicate, luminous beacon in a desolate urban landscape.

Bob Allies and Graham Morrison formed their practice after winning a competition for a public space in Edinburgh. A subsequent competition for the British Embassy in Dublin, as well as exhibitions of their work in Japan and South America, brought them wider attention. Now a traveling exhibition, on view at the Rhode Island School of Design in Providence from February 22 to March 21, introduces their work to this country.

In the exhibition catalog, published by the University of Michigan, Allies and Morrison discuss what Nikolaus Pevsner calls "moderation, reasonableness . . . and observation" in their work and cite Carlo Scarpa, Gunnar Asplund, and Alvar Aalto as inspiration. Presented in austere line drawings, photographs, facade studies, and intricate models, the work in the exhibition—from the embassy in Dublin, completed in 1995, to buildings in London and Sheffield and at Cambridge University—demonstrates the impressive range of Allies and Morrison's architecture. *Brian Carter*



PRISON SYSTEM EMBRACES DESIGN-BUILD **Among agencies that build buildings, the Federal Bureau of Prisons has been one of the staunchest supporters of separate design and construction contracts. But in a major shift, FBOP is finally beginning to use design-build.**

Last year the agency tested design-build on a Forrest City, Arkansas, prison camp, awarding a $9.6 million contract to architect Reese Associates of Oklahoma City and contractor Flintco Companies of Tulsa. Now FBOP is going further. By summer Scott Higgins, the agency's design and construction chief, hopes to award design-build contracts for a medium-security prison in Petersburg, Virginia, and a maximum-security facility in Coleman, Florida. Each will cost about $50 million.

The need to add space quickly is one factor behind the agency's move to design-build. Last year Congress added to the prison system's space crisis when it ordered the District of Columbia's Lorton, Virginia, prison complex to close by the end of 2001 and gave FBOP responsibility for housing D.C.'s inmates. Some inmates will be headed to Coleman and Petersburg, but more prisons will be needed. Those probably will be design-build projects, too, Higgins says. ***Tom Ichniowski***

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CIRCLE 15 ON INQUIRY CARD

IN A FINAL INTERVIEW, WRITER BRENDAN GILL SPOKE OF CRITIC'S ROLE

Born in Hartford, Connecticut, in 1914, Brendan Gill started contributing to the New Yorker *in 1936, shortly after graduating from Yale. He spent the next 51 years there writing on various topics—including film and theater—before becoming architecture critic for the "Sky Line" column, a role he performed until last summer. Gill had the unusual distinction of working with all four editors of the* New Yorker *since its founding in 1925.*

Some weeks before Gill died at the age of 83 on December 27, he discussed his thoughts on archi-



tectural criticism with Suzanne Stephens, whose article on criticism will appear in RECORD*'s March issue.*

"Today the greatest difficulty in writing architectural criticism is the lack of interest in architecture on the part of most editors. And there is the problem of the availability of space. Buildings are treated as news, as events. Tina Brown [current editor of the *New Yorker*] wants topicality. She doesn't care who writes it. It's a question of journalism: do you want the latest news or the best writing? When William Shawn was the editor, it was a journal of essays.

"The *New Yorker* was quite different when I began working there in the 1930s under Harold Ross. It was intentionally funny, which lots of magazines were in those days. Today we are afraid of mockery.

"The magazine achieved its stature under Shawn. He was highly moral, and so was Lewis Mumford, who took over the architecture column in 1931. Mumford not only wrote criticism but reviews of art galleries. Reviewing art galleries or movies and plays is different from criticizing, since you tell the readers what they want to see. It's a journalistic service. Criticism, on the other hand, addresses the work of art and the maker and doesn't give a damn about the reader. That was Mumford's intention with architecture: he worked from the abstract to the particular, instead of the other way around.

"Mumford, who wrote the column until 1963, was viewed as the major architectural critic in America by the 1940s and 1950s. I worshiped Mumford for his noble stance. He sought to transcend our human natures in an Emersonian way. But Mumford did have an evangelical problem; the hortatory is not always practical in use.

"When I was writing the 'Sky Line' column I also tried to write criticism, not reviews. I wanted to address the matters that concerned the architect. But you also have to ask yourself how the building affects you. That has nothing to do with the way it works. Do Frank Gehry's buildings work? Kahn's Salk Institute, his Richards Medical Research building, and Wright's Johnson Wax building didn't work.

"While today writers prefer being movie reviewers to being architecture critics, the preservation movement has helped architectural criticism. By preserving buildings, we have become knowledgeable about what we are looking at. As for avant-garde architectural ideas, from what I have seen, there needs to be more rigor, not only in the grammar but in the thinking. You can't invent a grammar that suits your purpose and win the argument. None of us are hard enough intellectually on ourselves."



DOMINIQUE DE MENIL, HOUSTON PATRON OF ARTS AND ARCHITECTURE, IS MOURNED

Dominique de Menil, a renowned patron of artists and architects and a stalwart supporter of liberal causes and politicians, died on December 31 in Houston at the age of 89.

A daughter of a founder of the oil services corporation Schlumberger, she and her husband, John, moved to Houston in the 1940s. Once there, the couple helped transform a political and artistic backwater into a culturally sophisticated and politically tolerant community.

But it was as a patron of artists and architects that de Menil, once called a Medici of Houston, is best known. In the 1950s she took the fledgling University of St. Thomas under her wing and hired Philip Johnson to produce its master plan and first buildings. A decade later she commissioned Abstract Expressionist Mark Rothko to paint 14 brooding purple canvases and hired Johnson to design a chapel around them. He and Rothko had a falling out, and the chapel was completed by Howard Barnstone and Eugene Aubry. But Johnson still refers to de Menil as the best friend he ever had.

In the 1980s she gave Renzo Piano his first American commission, a gallery for the Menil Collection (designed with Ove Arup & Partners), her extraordinary holdings of Cycladic, African, and Surrealist art. She later brought Piano back to design a home for the paintings of Cy Twombly, one of the many artists she championed before the rest of the world caught on.

"The Menil is the best private museum in the world," says Johnson. "The collection is so fine, and so personal, that it justifies her way of building an institution. She wasn't interested in blockbusters. It was always quality, quality, quality."

Her final architectural project was the Byzantine Fresco Chapel, down the street from the Menil. Designed by her son Francois, it displays two 13th-century frescoes that she rescued from thieves and restored.

No single word can describe the role of Dominique de Menil. Patron, teacher, advocate, conscience—she was many things simultaneously. "She gave so much to Houston that it will take a long time for the city to understand it," says Eugene Aubry. "She got a lot of people to understand art and make it part of their lives." *David Dillon*

The Menil Collection (above), commissioned by Dominique de Menil, was Renzo Piano's first work in the U.S.



PHOTOGRAPHY: © ANNE GALLIRE (NEW YORKER (LEFT); PAUL RESTER (TOP RIGHT); M. S. STOCK (BOTTOM RIGHT))

COMPUTERS SHED DRAB DUDS FOR HANDCRAFTED DESIGNER WEAR

Denver architect Robert Savi is betting clients will pay top dollar for a computer as beautiful as it is powerful. His new company, TechStyle, wraps computer components in rich, handcrafted solid-wood casings to match clients' homes.

"People have been grumbling for a while about how awful computers look," says Savi, who used to design health clubs for an architecture firm. Clients often asked him to conceal their drab, putty-colored computers. Manufacturers have responded to similar complaints by offering a line of black computers.

TechStyle sends an interior designer to clients' homes to help select the best wood casing—including exotic woods—for the surroundings. But Savi says his handiwork is not just a pretty face; it's top quality on the inside too. TechStyle uses the best components for its IBM-compatible systems, and sends trained technicians to set them up on site.

The price for marrying custom woodworking and 20th-century technology is anywhere from $4,900 to $7,000 per system. *Debra Morgenstern Katz*



MAUSOLEUM TOWER RISES IN CANADA

A nine-story, earthquake-resistant mausoleum that may ultimately house the remains of 90,000 people in crypts and urns is under construction in Vancouver, British Columbia. The concrete structure covered in white marble will be Canada's first mausoleum tower and North America's largest single mausoleum when it is completed in the summer of 1999.

Alvin Mitchell, president of Season Memorial Park and a former high-rise condominium developer, saw more opportunity and certainty in the funeral home business. He says the government approval process for the mausoleum took three years. The land and planning/design preparations cost $6.5 million, and Mitchell expects to spend another $20 million on construction and start-up. The architect, Robert Isaac-Renton of Vancouver, specializes in church design.

"We've been approached by a Second World War veterans' group that wants to buy an entire floor of the mausoleum and decorate it to honor the memory of fellow veterans; they want to put their medals permanently, and securely, on display," Isaac-Renton says. "There is also some interest among local Italian and Asian communities in having their own floors."

A penthouse with a memorial chapel will look out on the splendor of the Pacific Ocean and the Cascade Mountains—a view, real estate agents might say, to die for. *Al Warson*



NEW URBANISM TRIUMPHS IN WASHINGTON, D.C. **On an unremarkable stretch of Kenilworth Avenue in Northeast Washington, D.C., remarkable things are happening. Twenty-six acres of land, bordered by what had been one of the capital's most crime-ridden neighborhoods, are being transformed into a new middle-class oasis called Parkside and its sister community, Paradise at Parkside.**

Forty years ago, in response to crowding and segregation in the city, developers began to build housing on the urban fringe, creating new communities, like Parkside and Paradise, for the black middle class. But by the mid-1980s, according to a report by the National Task Force on African-American Men and Boys, the "combination of joblessness, drugs, and crime overwhelmed the neighborhood . . . [and] brought chaos and despair to the community." Rather than succumb to these urban ills, residents, businesses, and patrols by the Nation of Islam formed an alliance and took action. When an unarmed citizens' patrol turned back an armed drug dealer, the media picked up the story. That victory was the first in the neighborhood's economic and physical rehabilitation.



In 1987 Telesis Corporation, a Washington-based community development company, organized public and private investors to redevelop the existing housing at Paradise. Vacant land from a demolished housing project was deeded from the city for the construction of Parkside. The U.S. Department of Housing and Urban Development, Fannie Mae, the AFL-CIO, and local banks provided more than $35 million in construction and mortgage loans.

Paradise, the renovation, is almost two dozen low-rise apartments dotting a tract of barren grass. While the buildings have been refurbished and are now well maintained, they remain examples of a Modernist sensibility whose failings have been well documented. At Parkside, by contrast, architect Suman Sorg, of Sorg and Associates, got the city to reestablish a traditional Washington street grid, complete with a park square. Individual town houses and, marking the corners, larger condominium buildings, all with small yards, provide a cohesive street fabric. Landscape architects Oehme & van Sweden provided lush plantings that spill out of yards and soften edges. With a construction cost of $42 per square foot, the quality of materials is modest, yet the overall result is so much better than its surroundings that it's hard to criticize.

With its comfortable houses, pleasantly scaled streets, and landscaped yards, the four square blocks of Parkside are a re-creation of what city living used to be. And the neighborhoods' architectural improvements have had positive repercussions beyond their borders. According to the task force report, crime in the area has dropped significantly. Drug arrests have plummeted from 700 in 1987 to less than a dozen in 1996; robberies from 33 to five; homicides from six to zero. *Ellen Sands*



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CIRCLE 16 ON INQUIRY CARD

RESIGNATION AND LAWSUIT UPSET SKIDMORE, OWINGS & MERRILL

For years Skidmore, Owings & Merrill has crafted its image as meticulously as it designed office towers. But now the firm's polished reputation is threatened by two unrelated matters: the resignation of one of its top designers and an $11.5 million lawsuit filed against the firm by a dozen former partners.

Late last year award-winning designer Joseph Gonzalez left SOM's Chicago office and his position as acting chairman of the Commission on Chicago Landmarks, which is charged with safeguarding architectural treasures. Gonzalez's resignation from the commission came after the *Chicago Tribune* disclosed that his appointment to the panel had been bolstered by a biography (furnished to Mayor Richard Daley by SOM) containing false statements. Among them: Gonzalez was a registered architect in Illinois and Wisconsin. He wasn't.

Gonzalez blamed the inaccuracies on clerical errors. But SOM partners say that he had ample opportunity to correct the mistakes.

For years, Gonzalez's lack of a license did not matter. SOM was an Illinois general partnership, which meant that its members could practice if two-thirds of them were licensed. But in 1995 the firm became a New York limited liability partnership, requiring all partners to be licensed.

Gonzalez gave up his partnership then and in 1997 failed the structural engineering section of the Illinois licensing exam. Last October Gonzalez abruptly left SOM, saying he wanted to work for a medium-size firm.

Having put the Gonzalez matter to rest, SOM now finds itself enmeshed in a dispute with former partners of the firm.

In their lawsuit, filed in 1996, the ex-partners—who include Bruce Graham, James De Stefano, and John O. Merrill (son of founding partner John Merrill)—claim that SOM played a financial shell game to deprive them of retirement benefits and other compensation to which they are entitled. Lawyers for the firm flatly deny the accusations. They are expected to take depositions from the former partners early this year. *Blair Kamin*



NEW MENTAL HEALTH FACILITY TAKES ITS CUES FROM THE STREETS OF LAREDO

In designing a new mental health facility in Laredo, Texas, near the Mexican border, the San Antonio firm Lake/Flato co-opted the elements of the surrounding neighborhood for their design. Rejecting the traditional, institutional approach to psychiatric facilities for the new 55,000-square-foot Laredo State Center, the architects have created a pleasant and healing environment that reflects the character of the mostly lower-income, Mexican population it serves.

Lake/Flato, best known for the Carraro residence, near Austin, and the Witte HEB Science and Education Museum, in San Antonio, placed a cluster of small, interconnected buildings around lushly landscaped courtyards on 15 acres of land. Four units—the largest of which accommodate 18 patients at a time—fan out from a central *sala* (Spanish for "living room"). The one-story structures are ringed with open porches, which are shaded by overhanging, galvanized-metal roofs. Brightly colored stucco in yellow, green, and purple is the predominant cladding. "Color is very important to the local population," says project architect Matt Morris, AIA. Courtyards contain mostly native trees, flowers, and fountains.

The budget was tight, at $5.5 million. Lake/Flato kept costs down by using stained concrete floors and traditional, inexpensive stud-wall framing, which was bid out to several local contractors.

The designers' most important mandate was, perhaps, organization. "It had to be easy to find your way around," says Morris. "A lot of people come in disoriented, and many of them can't read, so we couldn't rely on an elaborate signage system. Instead, a particular building can be spotted easily by color and form."

The airy spaces are vastly different from the uninviting old facility, a low-slung and overcrowded Air Force hospital building from 1948, and the change has affected admissions dramatically. Says Morris: "The number of people who come voluntarily for treatment has tripled since the new facility opened." *Marina Isola*

PORTLAND FIRM DEMONSTRATES ERGONOMICS ON A SHOESTRING **When companies use architectural excellence in the workplace to show respect for their employees, the payoff can be dramatic. A well-designed setting can improve both the physical comfort and the attitude of workers.**

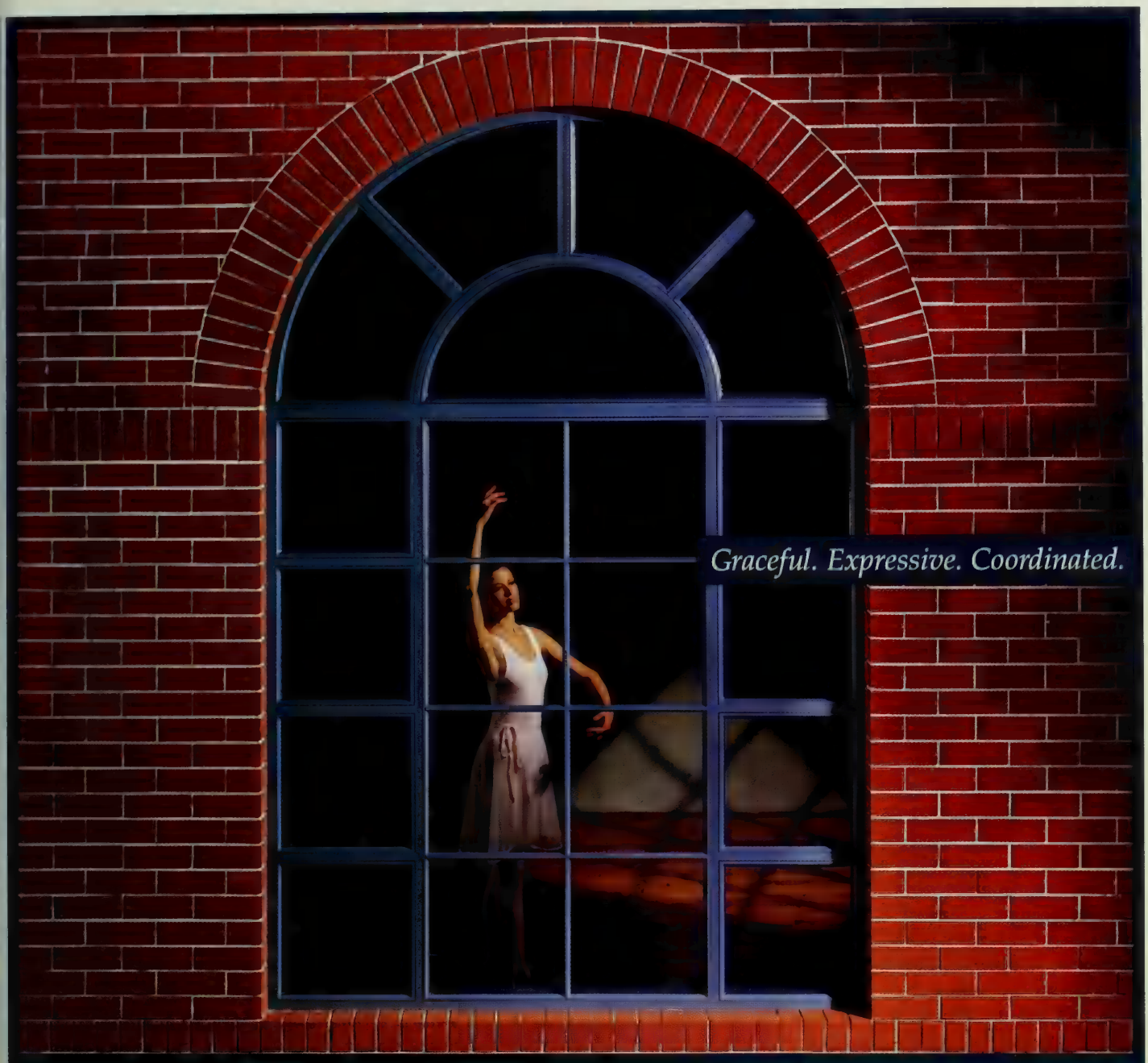
Yet how often is design for those at the bottom of the totem pole a high corporate priority? Telephone operators are routinely shunted away into "egg-crates," according to Karen Niemi, project architect with Yost Grube Hall Architecture, in Portland, Oregon. Such working conditions are conducive to low productivity and high rates of repetitive strain injuries (RSI).



In designing a regional call center for PacifiCorp, a Portland-based electric utility, Niemi and her staff sought a visually lively, comfortable environment on a modest budget. The 40,000-square-foot center, which is used around the clock, is splashed with primary colors and images of both eastern and western Pacific Rim cultures. Backlit colored fiberglass partitions reminiscent of shoji screens contrast with rusticated black Vermont slate floors.

Workstation heights are adjustable, so workers can sit or stand as they work. Operators can change position frequently throughout the day, reducing the potential for RSI and increasing their sense of control over the environment. Curved walls group the workstations into "neighborhoods." No workstation is more than 50 feet from an exterior window.

The rewards of the new design have been great. The architects won an award from the International Interior Design Association, PacifiCorp customers have enjoyed shorter wait times per call, and the employees appreciate the vitality of their new workplace. ***J. Novitski***



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CIRCLE 17 ON INQUIRY CARD

SMALL AND MIDSIZE FIRMS ARE MORE LIKELY TO PIRATE SOFTWARE

A New York architectural firm paid big last December for a transgression that many firms, intentionally or simply out of carelessness, do not take steps to avoid. Milo Kleinberg Design Associates (MKDA) was caught operating design software on more workstations than it had purchased licenses for. An employee had reported the firm, calling a software-piracy hotline operated by the Business Software Alliance (BSA), a software industry interest group. Asserting its innocence, MKDA agreed to pay BSA $150,000 to avoid litigation.

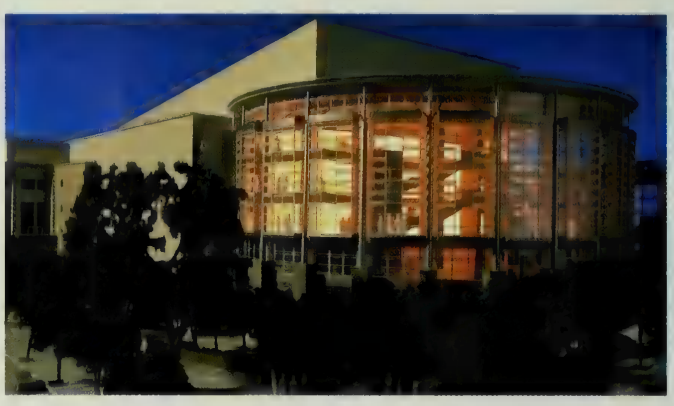
BSA says the design industry is comparable to other industries in its use of unlicensed software. Overall, says BSA, about a quarter of the programs installed on computers in this country are unlicensed. However, AutoDesk, the largest supplier of CAD software, estimates that 85 percent of its software on computers in the United States is unlicensed, and even more overseas.

According to sources in the design and software industries, the most likely transgressors are, like MKDA, small or midsize firms—those with fewer than 50 employees. Larger firms benefit from bulk-rate software packages. They also have employees dedicated to software management who ensure that no unlicensed software is installed. Smaller firms, however, generally cannot benefit from bulk rates and are therefore more inclined to copy software. Even if owners and employees of small and midsize firms aren't dishonest, they're less likely to have a dedicated information technology manager to guard against unintentional piracy.

Midsize firms, those with between 10 to 50 employees, have greater turnover than the smallest firms. Since the BSA hotline capitalizes on vengeful former employees seeking retribution, these firms are more likely to get caught pirating software.

Linda Joy Weinstein, AIA, chair of the Computer-Aided Design Professional Interest Area of the AIA, says the software industry exaggerates the extent of piracy among design firms. (AutoDesk's estimate is based only on firms that have been caught.) "[The problem] can be handled by the software industry and the courts," says Weinstein. She places a share of the blame on software companies: they secured market share by flooding firms with free software, fostering an atmosphere of noncompliance.

"There should be empathy among design firms for the situation," says Sandy Boulton, who heads the antipiracy unit at AutoDesk. "We are all selling intellectual property. The only way we can fund research and development and make better software is by having people buy software." *David Simon Morton*



WHILE SOME SYMPHONIES STRUGGLE, SEATTLE BUILDS A CONCERT HALL

Quick! Name the next major American concert hall to open in the 20th century. No, it's not Frank Gehry's Walt Disney Concert Hall. It's Benaroya Hall in Seattle, to be completed this year. At one point the two projects were scheduled to open within months of each other, but budget controversies have postponed Disney Hall's completion until 2001.

As simple as Gehry's project is complex, Benaroya Hall will cost significantly less at $118 million. The 187,000-square-foot project, designed by Loschky Marquardt & Nesholm, of Seattle, has a 2,500-seat main auditorium and a 538-seat recital hall. The design is a large rectangular box clad with alternating bands of precast concrete and limestone. A semicircular glass atrium will welcome concertgoers from a new public plaza.

Built directly over an active railroad tunnel downtown, the project proved particularly challenging for acoustical engineer Cyril Harris, who has also worked on the Metropolitan Opera House in New York City. To address this problem, the entire auditorium is acoustically isolated within a concrete box resting on 310 vibration-dampening rubber pads. The pads sit on top of a two-level underground parking garage that spans the tunnel.

"New concert halls may be a dying breed as symphonies struggle for audiences," laments Mark Reddington, AIA, of LMN. Luckily, Benaroya Hall has received financial support from local companies such as Boeing, which is donating project-management services. Although there is potential for a clash between art and industry, Boeing's hard-nosed approach is helping keep the project on track. *Sheri Olson, AIA*



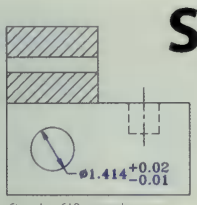
BOFILL'S BARCELONA THEATER OPENS AFTER YEARS OF DELAYS

Ricardo Bofill's National Theater of Catalunya in Barcelona, one of several cultural projects originally planned to to be completed in time for the 1992 Olympic Games, finally opened last fall. It was commissioned in 1986 by the regional Catalan government as a center for Catalan-language theater. Construction began in 1991 but was halted for lack of funds.

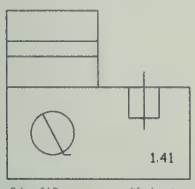
Bofill thus finds himself inaugurating a design from his "classical" period, a structure shaped like a Greek temple on the scale of a railroad station and supported by 40-foot-high precast-concrete Tuscan columns. The 900-seat main theater stands inside a mammoth glass-walled lobby like a jewelry box. Shaped like an amphitheater, it is finished in walnut and maple with classical detailing. The complex also includes experimental and outdoor theaters as well as a drama school. The cost was reportedly a relatively modest $40 million. ***David Cohn***



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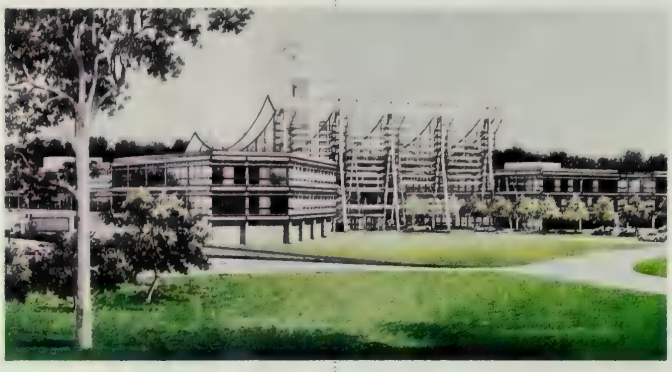
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NEWS BRIEFS

Boom times Of the 48 chapters of the AIA that responded to the Boston Society of Architects' annual survey of business conditions, 34 reported that business is booming for their member firms. Only the Hawaii and Buffalo-area chapters reported flat business; the rest reported that business is "purring along OK." Last year 21 chapters reported booming conditions. Four years ago, none did.

A unique competition in Cincinnati Zaha Hadid, Daniel Libeskind, and Bernard Tschumi have been selected as finalists in a competition to design a new $25 million home for the Cincinnati Contemporary Arts Center. In narrowing the field from 12 architects to three (from an original 97), the selection committee refused to look at models or drawings, relying solely on interviews with architects about proposed approaches. The museum wants to develop a program with the winning architect the same way the museum develops site-specific installations with artists. A winner will be selected this month.



Lauber + Wöhr's scheme for Mercedes-Benz's North American headquarters in Pearl River, N.Y.

Mercedes-Benz builds in U.S. Mercedes-Benz selected Lauber + Wöhr Architects of Munich over five American firms to design the auto giant's new North American headquarters. At the heart of a design Mercedes-Benz calls "low-key and restrained" is a dramatically upturned atrium roof reminiscent of Eero Saarinen's Dulles Airport. The three-story, 400,000-square-foot building will be built in Pearl River, New York, at a cost of $50 million.

Best architecture schools The 1997 Gourman Report, which ranks undergraduate and graduate programs, rates Harvard as having the best graduate program in architecture. In descending order, the next best programs are at MIT, Princeton, the University of California at Berkeley, the University of Pennsylvania, Carnegie Mellon, the University of Michigan, the Georgia Institute of Technology, Rice, and Columbia. *U.S. News* ranks programs differently, focusing more on reputation and using fewer criteria—it's a "beauty contest," says one program director. On this scale, Yale ranks fifth (12th in Gourman's ratings), Carnegie Mellon does not rank at all, and Harvard again takes the top spot.

Centennial for women in architecture One hundred years ago Illinois held the nation's first licensing exam for architects. Marion Mahoney, an associate of Frank Lloyd Wright and future wife and collaborator of Walter Burley Griffin, was one of only three architects to pass the exam. This year is therefore an important centennial for women in the profession—and, of course, for test takers.



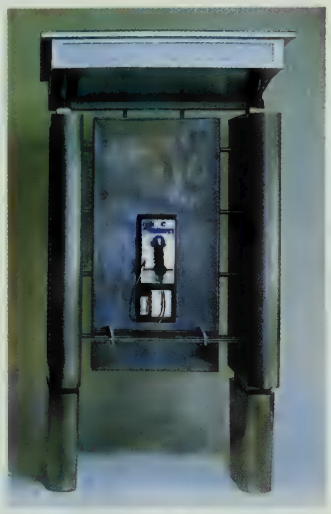
CIRCLE 19 ON INQUIRY CARD

Landscape architecture award The American Society of Landscape Architects bestowed its inaugural Award of Excellence on Rolland/Towers of New Haven, Connecticut, citing the firm's frequent and fruitful collaboration with architecture firms. Rolland/Towers has collaborated with Kohn Pedersen Fox Associates; Shepley Bulfinch Richardson and Abbott; Kieran, Timberlake and Harris; Perry Dean Rogers & Partners; and Mitchell/Giurgola, to name a few.

A gang-proof youth center Shubin + Donaldson Architects, a Los Angeles firm used to designing homes for the stars, has almost finished converting a South Central police substation into a 14,000-square-foot youth center. Using a great deal of donated material and labor, the architects installed a library and a gym and made classrooms from jail cells. The color scheme of rust reds, greens, and yellows was intended to be both inviting to kids and "gang neutral." A plan by the architects to leave one of the jail cells unconverted as a symbolic gesture was nixed by the client, the L.A. County Sheriff's Youth Foundation.

Blockbuster Frank Gehry will team with Rem Koolhaas and Jean Nouvel to design a 1.5-to-1.9-million-square-foot mixed-use complex on the northern periphery of Düsseldorf, Germany. The collaboration was Gehry's idea. His project manager says he wanted to work with the other architects "for the differences among them as much as the similarities." Next month the architects present a scheme to the clients, Commerz Leasing and Mercedes-Benz.

Architect introduces better telephone booth A small New York telecommunications company is counting on its well-designed booths to help it break into the local pay-phone market. Telebeam hired Rudy Fabiano, AIA, who designed



A new telephone booth designed by Rudy Fabiano for Telebeam.

the company's offices, to come up with a booth that was more attractive and more durable than the Bell Atlantic booths all over the city. "The roof is lifted to create a larger pool of light around the phone at night. It also gives it an iconic look," says Fabiano. The Mayor's Office and the City Council helped push the design through the approval process, and seven of the stainless-steel kiosks are now in operation, with 100 planned by the end of the year.

Renovating Kahn's last project After a year's worth of repairs are done, the only noticeable change to the Yale Center for British Art, Louis Kahn's last project, will be a fresher-looking roof surface. Below the surface, however, Kahn's 24-year-old roof will have been redesigned and reconstructed. It leaks from the inside, not the outside, due to humid gallery air condensing on metal roof panels. Wiss, Janney, Elstner Associates, a Chicago-area engineering and architecture firm, designed a vapor-retardation system to fit below the panels. The renovation will cost $3 million and will also include the installation of new carpeting and wall coverings. The museum's public galleries will be closed for the duration. ■



CIRCLE 20 ON INQUIRY CARD

BUILDING Design TOUR 1998

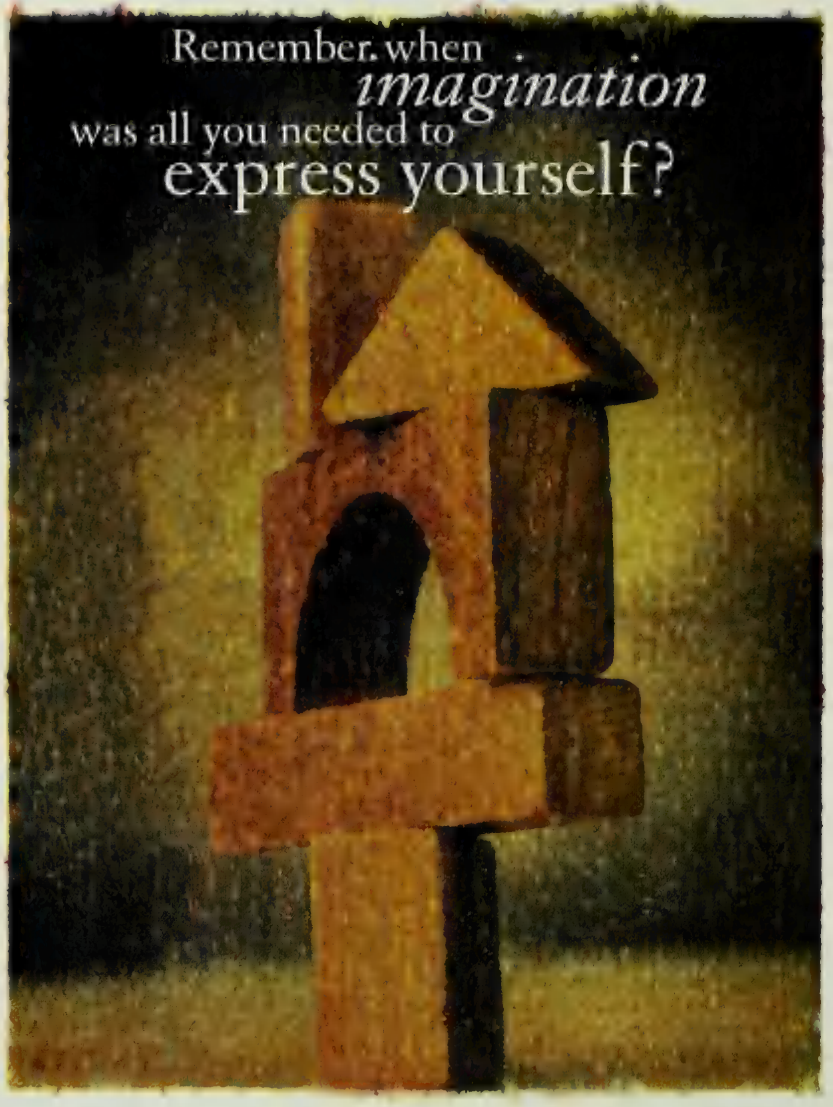
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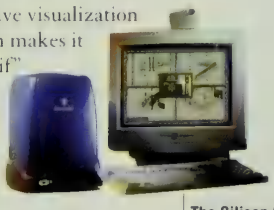


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CIRCLE 21 ON INQUIRY CARD

CORRESPONDENT'S FILE Culturally sensitive and environmentally friendly architecture is changing the face of German cities.

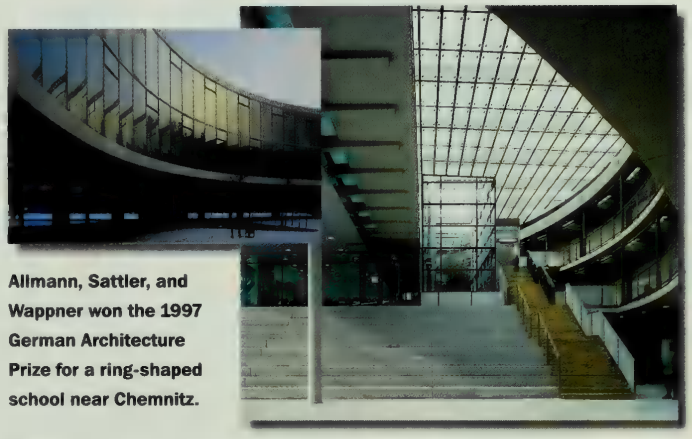
BY CLAUDINE WEBER-HOF

Claudine Weber-Hof is a freelance journalist and editor of books on architecture for Prestel Publishing in Munich, Germany.

The architectural wave Germany is riding is really a tectonic tsunami, a phenomenon unparalleled anywhere else on the continent. With the single currency looming large on the horizon, state agencies here are scrambling to prepare themselves for a more integrated Europe. This means pumping support into the school system, shoring up the country's cultural and political identity, and improving the infrastructure. The result has been a flood of architectural commissions.

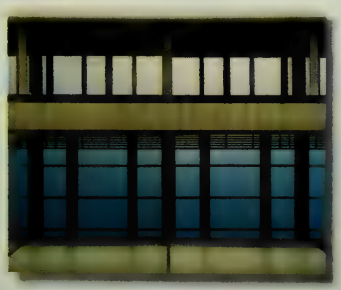
Underlying the current construction frenzy is the drive to build sustainably. Competition among designers to develop energy-efficient strategies is fierce; many are promoting historic preservation as culturally sensitive and environmentally friendly. And most designers are employing the "zero-energy" principle, aiming for structures that derive all the power they need from sun and soil.

The former East Germany is still straggling behind her more sophisticated Western sister in thinking green, but change is well under way. A massive transfer of technology is taking place, not only to East Berlin, where whole city blocks are being rebuilt from the ground up for the coming of the new capital, but also to growing urban centers such as Chemnitz and Weimar. And, as the 1997 winners of the German Architecture Prize demonstrate, architects from the West are taking exactly the right kind of know-how with them to the German frontier.



Allmann, Sattler, and Wappner won the 1997 German Architecture Prize for a ring-shaped school near Chemnitz.

Bauhaus revisited: Von Gerkan, Marg's Weimar Congress Hall (model below), due for completion next year.



A radiant, circular school

The students at Samuel von Pufendorf prep, which recently opened in the former East Germany, have been doing the strangest things. "These kids are happy to go to school," reports architect Amandus Sattler of the Munich firm Allmann, Sattler and Wappner, who received the 1997 German Architecture Prize for the school.

Situated near Chemnitz, in a cow pasture crisscrossed by creeks, the school's 49,000-square-foot circular, sustainable structure embraces a community of 1,000 students, offering sun-filled classrooms and a tree-lined inner courtyard for breaks and outdoor instruction. "The dynamic form and idyllic setting promote their general well-being, and the result is that there is a lot less violence than in regular schools. The kids haven't wrecked the toilets or written on walls because they see this as a worthwhile place and they leave it intact," says Sattler.

Because of its transparent steel-and-glass construction, the architects have fitted out the main building with the means to control temperature naturally: metal shutters provide shade, and generous windows and balconies welcome the sun and air. The neighboring gymnasium, a 37,000-square-foot sports hall that is fully glazed on three sides, depends on similar strategies to moderate interior conditions. A special feature here is the floor, a two-layer slab comprising a concrete-and-steel plate with a stone covering. This dense platform absorbs the warmth of sunlight like a baking brick and radiates it back into inhabited space.

PHOTOGRAPHY: © STEFAN MULLER-NAUMANN (TOP); H. LEISKA (BOTTOM)

The ghost of Gropius present... Von Gerkan, Marg+Partner are racing against time to build the Weimar Congress Hall, scheduled to open next spring when the city is inaugurated as the 1999 European City of Culture. They recently garnered the commission when the original designers ducked out because of disagreements with preservationists over the early Modernist Weimarhalle next door. GMP is saddled with the double load of erecting the assembly and concert hall at lightning speed while honoring the legacy of Walter Gropius, whose 1925 Bauhaus headquarters in the same region shaped the character of modern architecture, and whose strict functionalist spirit haunts the project.

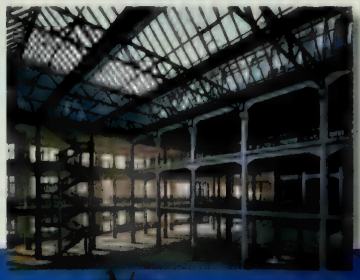
Says design team leader Doris Schäffler, "From the get-go we envisioned the building as simple and elegant, so that constructing it in a short time would be easy. But what has developed is an eerie coincidence: we met the civic assembly's functional requirements, and that, in a nutshell, gave us the design. It's Bauhaus revisited."

GMP takes Bauhaus functionalism a step further with an old-fashioned sensitivity to landscape. Instead of addressing the city directly, the new design faces, sphinxlike, onto parkland, with wings at either end of the building. In this respect, the complex has more in common with 19th-century exhibition halls than with strict Modernism.

But in composition and materials, it is a thoroughly up-to-date design, with generous wood cladding inside and out paying homage to the German craft tradition that gave birth to the Bauhaus.

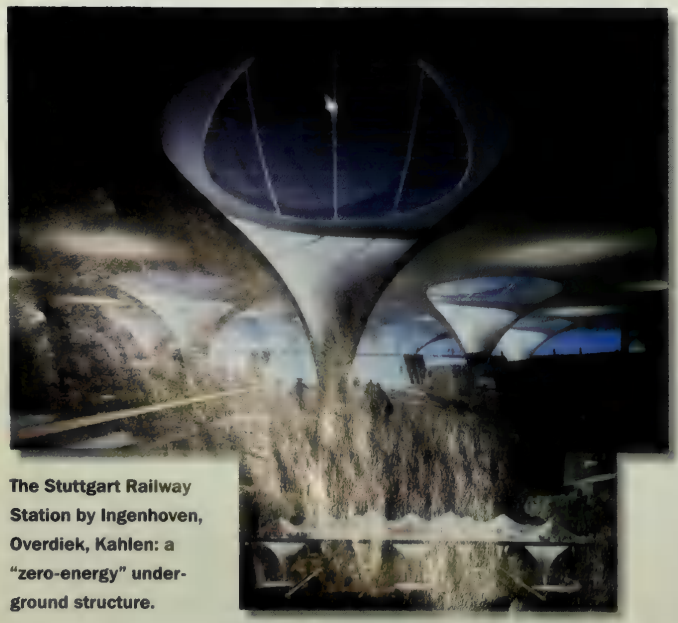
...and the spirit of future past Zentrum Kunst und Media, the Karlsruhe Center for Art and Media, has finally opened after a torturous eight-year struggle. Rem Koolhaas won the design competition in 1989 with his blue glass box. But the city couldn't afford the swank arrangement and hired Hamburg architects Schweger+Partner to renovate a World War I munitions factory instead. A tiny rendition of Koolhaas's cube adorns the entrance, a weak and weary monument to a splashy commission gone awry. German critics are calling the ZKM building "unspectacular at best," and this after 80 years of planning.

But for enthusiasts of industrial architecture, ZKM is a grand success. Where machines once made weapons under 10 rhythmically arranged glazed atria, electronic media moguls now discuss the shape of art in the next millennium. The ungainly contrast of old and new is resolved in the science of the structure itself: the nineteen-teens behemoth, all 450,000 square feet of it, was one of Germany's first steel-and-concrete skeleton buildings; as a former pioneering structure, it brings its new occupants full circle to address technology past, present, and future. Schweger+Partner honored the city's complex layout demands with an emphasis on the Media Museum, the aspect of ZKM concerned primarily with virtual reality and cyberspace. The architects designed it to host interactive installations and simulation technology, using steel girders to build slim bridges and including catwalks to improve circulation and create a futuristic feeling of dematerialization.





ZKM, an arts center in a renovated munitions factory in Karlsruhe, has opened after years of controversy. The project was designed by Schweger+Partner.



The Stuttgart Railway Station by Ingenhoven, Overdiek, Kahlen: a "zero-energy" underground structure.

21st-century Stuttgart As part of an initiative to revamp Stuttgart's transportation network, the city has hired the Düsseldorf firm of Ingenhoven, Overdiek, Kahlen and Partner to sink the Stuttgart Railway Station underground. Coupled with a $2.74 billion tunnel project to ensure the smooth flow of trains through the terminus, the architects have been given $55 million and 10 years to construct the mammoth hub. To American eyes the design is preposterous: a 1,500-foot-long by 300-foot-wide exoskeleton with 32 glass lenses peeping up out of a green park on the building's surface. It's as though Eero Saarinen's TWA terminal had sprouted eyes.

As otherworldly as the design appears, it is utterly ecological and energy-efficient. Modeling their design on the fan vaults of Wells Cathedral in England, the architects, in conjunction with designer Frei Otto, developed a state-of-the-art structural support system that opens a concrete cavern under the city to house trains, tracks, shops, and offices. The "eyes," or glazed cupolas, make up more than 10 percent of the ceiling, allowing light and warmth to penetrate to the platforms 15 feet below the surface.

Says Christoph Ingenhoven, "This is a zero-energy structure, and as the largest train station project in Germany, it will set the example for the 21st century." ■



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CIRCLE 23 ON INQUIRY CARD

Calendar

Philippe Starck Designs: Reinventing the American Hotel
Philadelphia
Through March 1
A sampling of the French designer's objects and interiors, featuring everything from furniture to utensils. Also on view are elements from a guest room at New York's Paramount Hotel. Philadelphia Museum of Art. 215/763-8100.

Signs and Wonders: The Lights of Times Square
New York City
Through March 8
Actual signs as well as photographic records are on display in this exhibition tracing the development of technology and imagery in Times Square advertising. New-York Historical Society. 212/873-3400.

International Interior Design Association Leaders' Breakfast
New York City
March 6
IIDA's Greater New York Chapter will hold its 10th anniversary Leader's Breakfast at the St. Regis Hotel. "Who's Leading Now—Facing an Economy of Competing Global Giants" is the scheduled panel discussion. For information or reservations, call Jeannie Bochette at 212/445-8891.

A. G. Rizzoli: Architect of Magnificent Visions
New York City
Through March 8
Drawings by the late draftsman, including his vision for a mythical city, YTTE (Yield to Total Elation). Museum of American Folk Art. 212/977-7298.

Zaha Hadid: Painted Projects
San Francisco
Through March 10
The first solo museum presentation of the work of the Iraqi-born British architect includes two dozen paintings of cities and buildings in assemblages of exploded lines and planes. San Francisco Museum of Modern Art. 415/357-4000.

Temple Bar: Dublin
New York City
Through March 11
Several buildings designed by young Irish architects, all planned in 1991 by Group 91 for an area of Dublin's medieval city center, are presented. Urban Center. 212/935-3960.

New Courthouses in Historic Contexts
New York City
Through March 15
Models and renderings of 16 new courthouses designed by New York architects are displayed in this exhibition, sponsored by the AIA's Committee on Architecture for Justice. United States Court House at Foley Square. 212/683-0023.

A. James Speyer: Architect, Curator, Exhibition Designer
Pittsburgh
Through March 22
Models, drawings, and photographs document the work of this Pittsburgh native, including a number of the city's noteworthy private homes. Carnegie Museum of Art. 412/622-3131.

Robert Adam: From Sketch to the Finished Drawing
New York City
Through April 5
An exhibition of the work of architect Robert Adam (1728–1792), considered the father of the Classical Revival in Britain, includes 65 drawings, models, objects, and books on loan from the Sir John Soane Museum in England. Frick Collection. 212/288-0700.

Fabrications
New York City, San Francisco, and Columbus, Ohio
Through April 12
Organized jointly and presented simultaneously at the Museum of Modern Art in New York, the San Francisco Museum of Modern Art, and the Wexner Center for the Arts in Columbus, Ohio, this exhibition features full-scale commissioned projects by such architects and designers as Mockbee/Coker, Eric Owen Moss, Smith-Miller+Hawkinson, Hodgetts+Fung, and Williams and Tsien. 212/708-9400 (MoMA).

Fresh Furniture
Pittsburgh
Through April 18
A survey of contemporary furniture designed and crafted in the United States. Society for Contemporary Crafts. 412/261-7003.

DX Permanent Collection
Toronto
Through April 19
Works in the collection by 20th-century Canadian industrial designers, including Jan Kuypers. Design Exchange. 416/363-6121.

Civics Lessons: Recent New York Public Architecture
Washington, D.C.
Through May 11
Projects in New York initiated by public agencies working with architects from 1985 to 1995. Organized by AIA/New York and the New York Foundation for Architecture, the show emphasizes the link between public investment in architecture and the economic, social, and aesthetic quality of the city. National Building Museum. 202/272-2448.

Toy Town
Montreal
Through May 31
An exhibition exploring how toys from several cultures have represented the village, town, and city. Twenty-six toy towns from the Canadian Centre for Architecture's collection—ranging from early 19th-century German wooden villages to recent CD-ROMs—are on display. Canadian Centre for Architecture. 514/939-7000.

Build Safe '98
Rosemont, Ill.
February 17–19
The eighth annual Construction Safety Conference is to be held at the Holiday Inn O'Hare International. Call Gayla Bockrath, conference manager, at 800/552-7744.

Arquitectonica: The Times Square Project
New York City
February 17–May 10
The first solo exhibition in New York of work by the Miami-based firm. The show focuses on the architects' design of a mixed-use complex combining a hotel with entertainment and retail components, to be built at 42nd Street and Eighth Avenue. Cooper-Hewitt Museum. 212/849-8300.

Alvar Aalto: Between Humanism and Materialism
New York City
February 19–May 19
Marking the 100th anniversary of Aalto's birth, this large-scale retrospective is the first in the United Sattes to present original drawings and models of work by the renowned Finnish architect, designer, and town planner. Museum of Modern Art. 212/708-9400.

Japan 2000: Architecture for the Japanese Public
Chicago
February 21–May 3
This exhibition features architectural drawings, models, and photographs representing approximately 15 structures, including museums, dams, bridges, police stations, health-care facilities, and stadiums by well-known and emerging Japanese architects. Co-organized by the Art Institute of Chicago and the Japan Foundation. Art Institute of Chicago. 312/443-3600.

Shiro Kuramata
New York City
February 25–May 2
Works on view by the late Japanese designer Shiro Kuramata include 35 notable (*continued on page 238*)

Family Portrait



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Inside every

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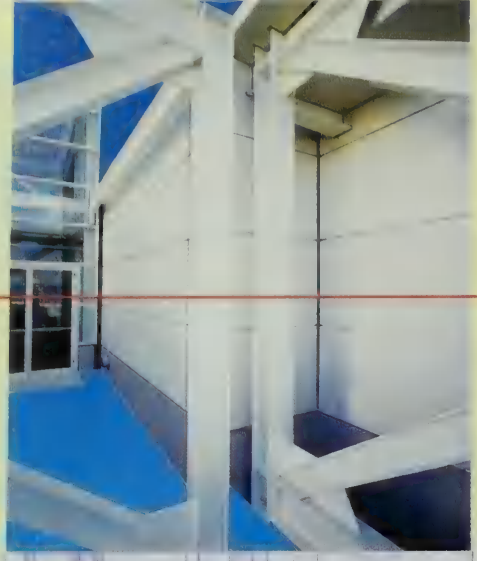
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LISTENING TO:

CON

by Andrea Oppenheimer Dean

The tension—some would say friction—between architects and contractors probably began around 2630 BC, the date ascribed to the first documented pyramid and first structure credited to an architect; it was the burial place of King Zoser near Saqqara, Egypt. Yet at the conclusion of a panel discussion among five contractors, which ARCHITECTURAL RECORD convened in New York City last fall to learn about the industry's concerns as they affect architects, J. Glenn Little, an executive vice president of Turner Construction Company, said, "If you took a group of architects from small, medium, and large firms, I bet they'd agree with everything we said." Throughout the discussion, moderated by Robert Ivy, FAIA, RECORD's editor in chief, the ambient goodwill toward architects was as palpable as it was unexpected. Areas of disagreement revealed themselves more fully in the panel members' responses to questions I asked them in follow-up telephone calls.

The fact that the construction industry is thriving—it's seeing its best period since 1984–85, according to Little—probably contributed to the contractors' benevolent attitude. Turner, the nation's largest construction company, projected that its 1997 sales would exceed those of 1996 by more than 10 percent, while F. W. Dodge's market forecast anticipates a 6 to 8 percent increase in 1998 construction over 1997. Such figures concur with the



Illustration by Michael Webb for ARCHITECTURAL RECORD

GOODWILL ABOUNDS AS CONTRACTORS DISCUSS THEIR WORKING RELATIONSHIP WITH ARCHITECTS.

TRACTORS

overall assessments and expectations of all five panelists.Richard Wolf is a principal of Alexander Wolf + Son, a New York City family-run business with an annual volume of $10 to $20 million, which specializes in renovations and other interior work. Desmond D. Emanuel is president of Sante Fe Construction, a minority-owned, privately held, unionized New York City company with an annual volume of about $100 million and a staff of 46 that "builds anything humans can function in," says Emanuel. George M. Grant is a vice president of Halmar Builders of New York, a Mount Vernon–based firm that earned $100 million last year building mainly highways, airports, and commercial buildings. Joseph M. Stella is an officer of P. J. Stella Construction, which is beginning its third generation of existence as a Wakefield, Massachusetts–based, family-owned, nonunion general contractor with an annual volume of $15 to $18 million. Although all the panelists are based in the New York and Boston areas, they believe that their opinions are representative of those of contractors nationwide. They also agreed that all members of their industry grapple with the same issues, whether their companies are big or small, regional or international, unionized or not, privately owned or publicly held.

There was, similarly, a general nodding of heads when Stella said that although there is more work than ever, there is also "far more competition than there needs to be. Sometimes it seems that a couple of firms are always keeping the margins down for everybody else. You have one or two lowballs, and they'll get the job. You see what the final pricing is, and you walk away scratching your head. Egos are involved. The question when you see another contractor is not 'How much money did you make?' but 'How much work are you doing?'" In fact, contractors are close-mouthed when it comes to their margins; that is why, when I inquired in follow-up conversations, most of the panelists treated the annual profits as classified information.

(According to the Construction Financial Management Association's 1997 Construction Industry Annual Financial Survey, the overall net profit for all types of contractors nationwide was 2.1 percent. It was 1.6 percent for "industrial/nonresidential" construction, 3.2 percent for "heavy and highway work," and 2.8 percent for "specialty trades.")

Architects should raise fees

Perhaps most unexpected, the five participants agreed that the solution for many of their problems is to raise architects' fees. These are depressed, they concurred, by owners' attempts to achieve the lowest possible costs and shortest possible schedules. But there's something else: "A lot of owners view architects as necessary evils; they don't see them as adding value to the project," said Wolf. He was not the only one to point out that the biggest losers from this drive to cut costs and increase speed are the owners themselves. "You end up with disappointed owners of poorly designed and constructed buildings," explained Wolf, a past president of the General Building Contractors of New York State, which, he says, has taken the position that the architect should receive a reasonable fee.

Why should contractors care so much? According to Little of Turner Construction, "The bottom line is that architects are not paid enough money to practice their art and craft to the level they believe achieves excellence. Excellence doesn't mean wasting money; it means making a set of drawings that is full and complete." Here it is, our panelists' most pervasive complaint: The documents they receive from architects are neither clear nor comprehensive. "There isn't the attention to detail on either the exterior or interior of buildings, and many architects skimp on construction administration," said Grant.

During a follow-up conversation Wolf expressed his frustration in greater detail: "It's not unlike what Detroit was doing before the Japanese put the pressure on them. They would send out a car 98.5 percent complete and expect the dealer to tidy up the remaining 1.5 percent." He reported receiving documents in which architectural and engineering responsibilities remained uncoordinated. And, Grant said, he has had more than one brush with architects and their consultants limiting the amount of time they're willing to spend on the job site because they feel they're not getting adequate reimbursement. "A contractor," he pointed out, "can't go back to the owner and say, 'I'm sorry, I've exceeded my budget and can't put any more time into your project.'"

Detailing a few of the problems caused by incomplete documents, Stella explained that his company subcontracts a majority of its work and relies on bids by subcontractors when putting together a package. "When subcontractors are not looking at the best set of documents, they make their own assumptions of how they envision the product going together. They bid it to us on those assumptions, and often they're wrong. The architect doesn't want to appreciate the position that we're put in because of the business's competitive nature. We realize how dependent we are on one another, we architects and contractors, but bad documents can erode the relationship." Bad documents tend also to erode the quality of specifications writing, said Grant, because the details aren't there.

Paring down costs and schedules undermines quality

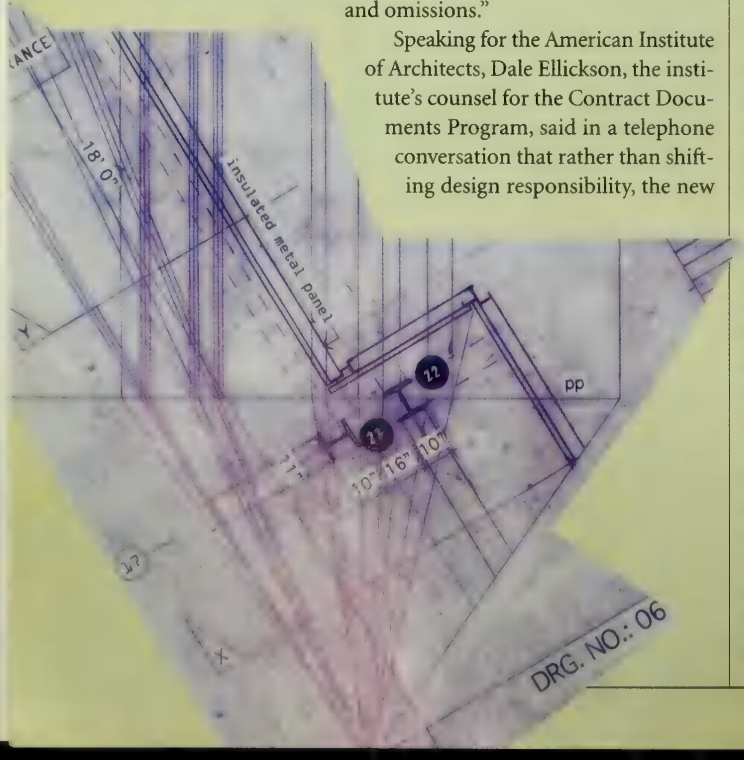
Underlying such complaints is a deeper and more pervasive grievance that by chopping away at costs and schedules, owners have undermined

Andrea Oppenheimer Dean is a contributing editor of ARCHITECTURAL RECORD. Michael Webb is an architect in New York who teaches at Cooper Union and Columbia University. He was a member of the Archigram Group in the 1960s and early 1970s.

overall quality. Take, again, the matter of specifications writing. Emanuel, who began his career as an architect, recalled that when he was a young designer, one of the partners in the architectural firm where he worked was a spec writer. Not anymore. Today, he said, word processing allows junior architects to produce specs by collaging together fragments from previous designs. Many of these young architects, moreover, having started their careers at a time when construction work was scarce, have little experience as spec writers, as Emanuel pointed out.

Whatever the reason, said Grant, when specs are unclear, the contractor will "go back to the architect and say, 'I'm going to build it this way,' and often the architect tells him no. So the contractor comes back with, 'This is not what I bid,' and then both of them have to go back to the owner." Paradoxically, the paring down of schedules and quality in an effort to achieve cost reductions often results in delays that inflate costs. It's a vicious cycle, and the ultimate loser, said Grant, is the owner. Emanuel pointed out that the problem is likely to worsen in coming years, as real estate investment trusts increasingly consolidate and once again become major clients. "The directors of these trusts," he said, tend to be "more bottom-line-driven than chairmen of major banks or businesses, so there's going to be even more pressure on the profession to produce in a timely way with less cost to the owner."

That led Emanuel to the thorniest subject of all for architect-contractor relations. Called design delegation in the jargon of the design and building industries, the concept, according to the panelists, has shaped recent revisions to AIA's flagship contract document, the General Conditions of the Contract for Construction, now designated A201; it describes the architect's role in administering construction and the rules for the industry. The revised A201 will carry new responsibilities for contractors for such subcomponents as HVAC systems and curtain walls. Little related the changes back to low architect fees. After doing work on a number of projects where the architect hasn't made any money, Little said, "he decides not only to spend less time but to shift the responsibility across the table." He added that the changes to A201 also represent a response by architects to threats by insurers to raise premiums or cancel coverage altogether as architects and owners increasingly sue for "errors and omissions."



Speaking for the American Institute of Architects, Dale Ellickson, the institute's counsel for the Contract Documents Program, said in a telephone conversation that rather than shifting design responsibility, the new A201 "clarifies things, makes things more explicit and gives two protections to contractors. One is that they don't have to do anything that isn't written in black and white. The other is that they don't have to do anything against the law." Nor do the 1997 revisions to A201 posit any changes in liability to the previous edition of 1987, according to Ellickson. He said the updated document is a response to the realities of a building industry in which an owner often saves money by relying on subcomponent specialists. That's not how the contractors viewed the matter.

Emanuel was the most vocal. Saying that his objections echo those of the General Building Contractors of New York State, which opposes the revisions, he stated that "there's no question in our minds that A201, as it is currently being published, will have an adverse impact on our relationship with architects." In fact, Emanuel characterized the proposed revision as "the hottest topic ever debated within the AGC," consuming hours of discussion time last September at the Associated General Contractors' midyear meeting in Albuquerque. A draft was approved at that meeting, said Emanuel, not because the membership liked it, but rather "because an enormous amount of work had gone into trying to get the best document, because it seemed to be the best we could get, and because supporters felt that not endorsing it would further alienate us from the architectural community in the future." Wolf objected to the way the AIA presented the changes to his industry: "We could nibble away at the draft but we were not part of the discussion process from the beginning." He also said, "If agreements are actually between the owners and the contractors, and the architect is off on the side, we question why the architect should draft the document—and be allowed to put in these provisions that are really quite onerous."

Shifting risk management

How onerous are they? "Here in New York State," said Emanuel, "the architectural community has identified 22 separate items that they're looking to design-delegate, including roofing." Design delegation, he said, is spreading from such things as curtain-wall and steel construction to "roofing and heating and ventilation systems, to everything."

In explaining what he believes will be the effect of the revised document, Little said that liability for errors and omissions made in the drawings—the risk management—is now completely shifted from the architect to the general contractor. Granted, he said, contractors will pass the risk down, for example, to the curtain-wall supplier, but because vendors tend to go in and out of business on a revolving-door basis, the real responsibility and risk will devolve to the contractor. Little also warned that if contractors are responsible for "the building standing up and doing what it's supposed to do," they will end up having to hire their own engineers and other professionals "who will be in competition with the architect." The real question, he concluded, is to define and achieve the optimal roles and relationships of owners, contractors, and architects. The best hope for smooth and productive relationships among the three players, he said, is a return to "professional standards rather than economics. Then we will have established what we should be doing today."

Not unexpectedly, architects' tendencies to delegate risk and responsibility to builders have strengthened contractors' and owners' growing preference for design-build construction-delivery systems. For contractors its advantages over a traditional design-bid process are obvious, since it includes builders from the start, gives them ultimate authority, and "allows them to avoid cost overruns and delays and everything else that goes along with the bidding process," said Wolf. For owners, he added, design-build provides one-stop shopping and "fits in

with their desire to lessen the role of the architect, who a lot of owners view as a necessary evil."

A new twist

An important twist recently has been added to design-build. Called design-build-complete, "it is where the industry's going to go," said Little. This is how it works: owners hire an architect to represent them throughout the process, but the architect actually carries out only the first 15 percent of the design. That puts designers in charge of those aspects of the process at which they excel, said Little, such as defining the program, figuring out space relations and adjacencies, configuring shapes, and outlining a seamless process. The owner then turns the process over to the contractor, while retaining the architect as an emissary.

"The idea," said Little, "is to get contractors in their role and architects in theirs, with each having the liabilities and responsibilities for their separate functions. Design-build-complete prevents the contractor from telling the architect, 'No, I'm sorry, we have to change this aspect of the design because we can't afford it.'" Some clients, Little asserted, are adopting Turner's preferred method in order to avoid court claims resulting from a newly popular, if dubious, practice among contractors. In describing it, Little said, "Contractors didn't used to look at a set of drawings and say, 'Well, there's a mistake here and here and here. I'll bid no fee, because I'm going to make twice my fee in claims for mistakes.' There are people who do that."

Another advantage of design-build-complete, said Little, is that it eliminates a major problem of design-build, namely that it lacks the checks and balances of the conventional architect-contractor relationship. Wolf explained, "Everyone at this table, if they're honest with themselves, would admit they've been in a situation where without the architect on the other side of the table, they might have been able to get away with something. In the design-build situation, the architect and the contractor are working together in a business relationship and—let's be realistic—the architect is going to have a very hard time telling the contractor to put more money into the project. I think there's a very dark side for the architectural profession in design-build." In design-build-complete, on the other hand, said Little, the architect has to approve the drawings before the contractor can build. "And he has to approve specifications before we can complete. The owner's standards and checks and balances are protected much better than in just design-build." Little finished by asking, "Is the process perfect?" and promptly answering, "No."

Asked whether he sees design-build-complete as a trend, Robert Peck, commissioner of the General Services Administration's Public Buildings Service, said that he wishes to reserve judgment until the GSA's first experiment with the new project-delivery method, the Las Vegas Courthouse, is completed in about 18 months. In the abstract, however, Peck said, he finds the approach, which the GSA calls bridging, attractive, in part because it could allow emerging design firms, with limited document-production capabilities, to compete for major projects. Ed Feiner, the GSA's chief architect, added, "The GSA really likes to experiment and test everything, but the jury is still out."

Is design-build or design-build-complete appropriate for all buildings? In Emanuel's experience, it works well for large projects when "you have a fairly sophisticated client who understands both the design and building process, who is clear about what he wants, who has some handle on pricing, who has a consultant who can help guide the process." Stella said that in his part of the country design-build is not yet popular: "I think part of it is that architects want to keep the process to themselves. What they're not realizing is that they're being forced to give it up." Little added that an incentive for architects to accept design-build-complete is that they usually earn a higher fee, at least when they work with his company. Emanuel noted, however, that many architects are marketing design-build as a way of expanding their services. "They see the trend as something they should lead, as a way to grab market share without really examining what's involved. I think that's a disservice to the profession."

New technologies are not up to speed

New technologies are another source of change in the architect-contractor relationship. The electronic revolution has altered not only the way designers produce drawings but the manner in which they communicate with contractors. For a project in Singapore, for example, a San Francisco–based architect might have the documents produced in Mexico, the curtain wall designed in Malaysia, and the steel detailed in England. "The problem," said Little, "is that the information usually comes to the architect's company uncoordinated, because the motivation of the business unit manager in each of the far-flung offices is not to produce the best quality. The question is, how can you get this wonderful technology, high productivity, and low-cost work to a quality level where we can accept it?"

Computer-aided design has similar problems, explained Grant. "The CAD system has been wonderful for architects. But do they know how to build what they're drawing?" Amid much head shaking, he answered, "Constructibility is one of the biggest problems I find. I don't know if they have the experience of doing construction or really know what they're putting on paper." The transmission of information is improved, the panelists agreed, but the same cannot be said for its quality.

THE CONTRACTORS' MOST PERVASIVE COMPLAINT WAS THAT DOCUMENTS FROM ARCHITECTS ARE NEITHER CLEAR NOR COMPREHENSIVE.

In Stella's experience, moreover, CAD allows architects to continually repeat their mistakes. "Designers can pull out the same detail they had problems with before without modifying it. If only they would stop and ask the contractor, 'Did this make sense?'" Compounding the problem of architects not learning from their mistakes, Grant said, is the fact that many design firms assign inexperienced staff members to the job site. Because greenhorn architects have no authority to make a decision in the field or modify a detail, they will take a problem back to the office and review it with a superior "who doesn't see the big picture of what's going on, what the status of the project is, what the scheduling requirements are," Stella said. Design-build can overcome some of these deficiencies, the panelists indicated. Because it provides designers with a better fee, insisted Emanuel, they will spend sufficient time up front working out details with the contractor, so that costly change orders and extras are avoided.

Ultimately, concluded the panelists, architects and contractors need to put their heads together and come up with ways to market their professional services in tandem to improve quality and streamline the construction process. "The best thing we could do is get architects more respect [among clients]; we need them. And the essence of it for us is that when an architect has the money to put together a good set of documents, it's easier for us to build and make money," said Wolf. And how is this to be done? By educating owners, answered Grant: "It's the owners, after all, who ultimately pay. If they organize their team, pay a decent fee, get the correct design, and the job is built on time, they're the ones who benefit." ■

VSBA TODAY

**EVEN IN THIS ERA OF "NEW" MODERNISM,
SAY ROBERT VENTURI AND DENISE SCOTT BROWN,
ICONS, SIGNS, AND SYMBOLS SPEAK TO US.**

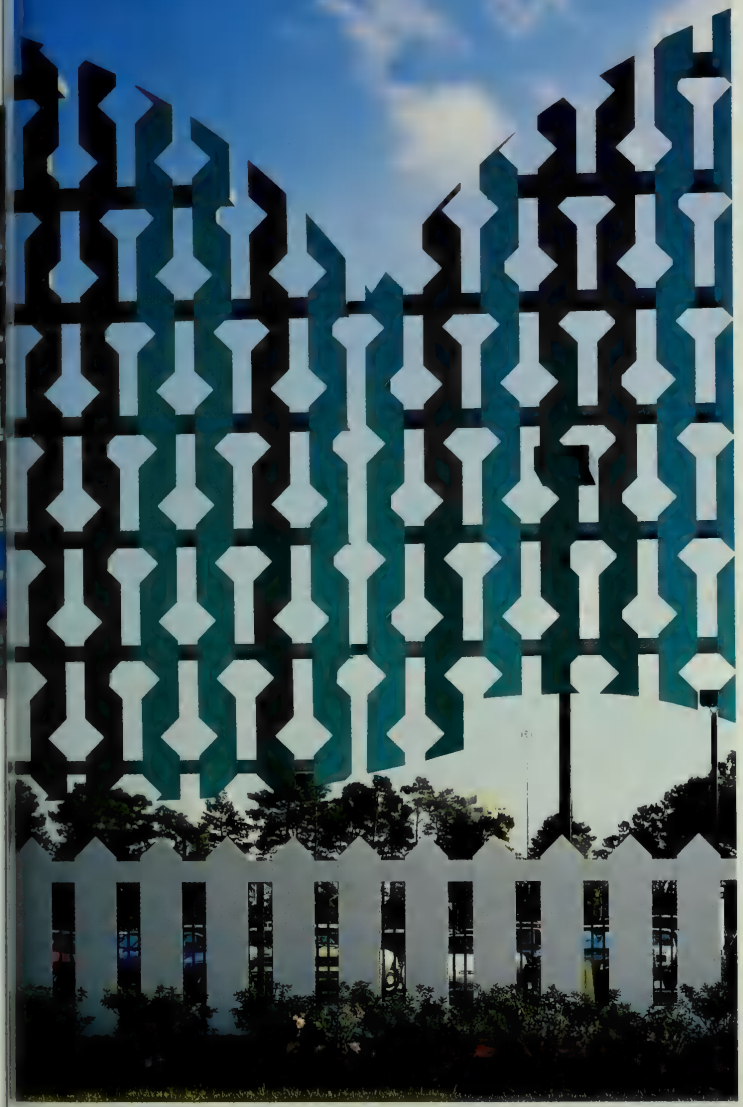






GAS STATION FOR DISNEY WORLD

The architects missed few opportunities to freight this [redacted] station with superscale iconic imagery. Older highway strips are evoked ("high reader" sign, opposite), as is domesticated suburbia (trees and picket fences, below and opposite bottom). The word EATS fritted into the glass (opposite middle) acts as an informational scrim for the graphics in the convenience store (right).

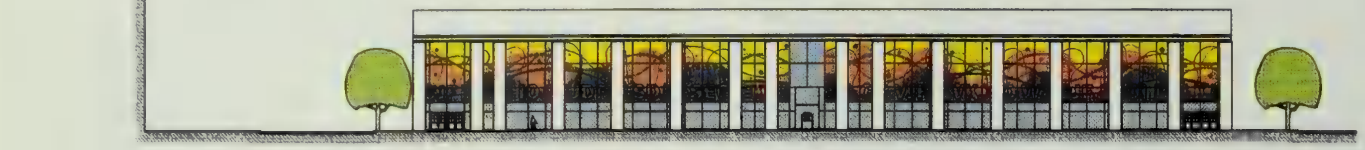




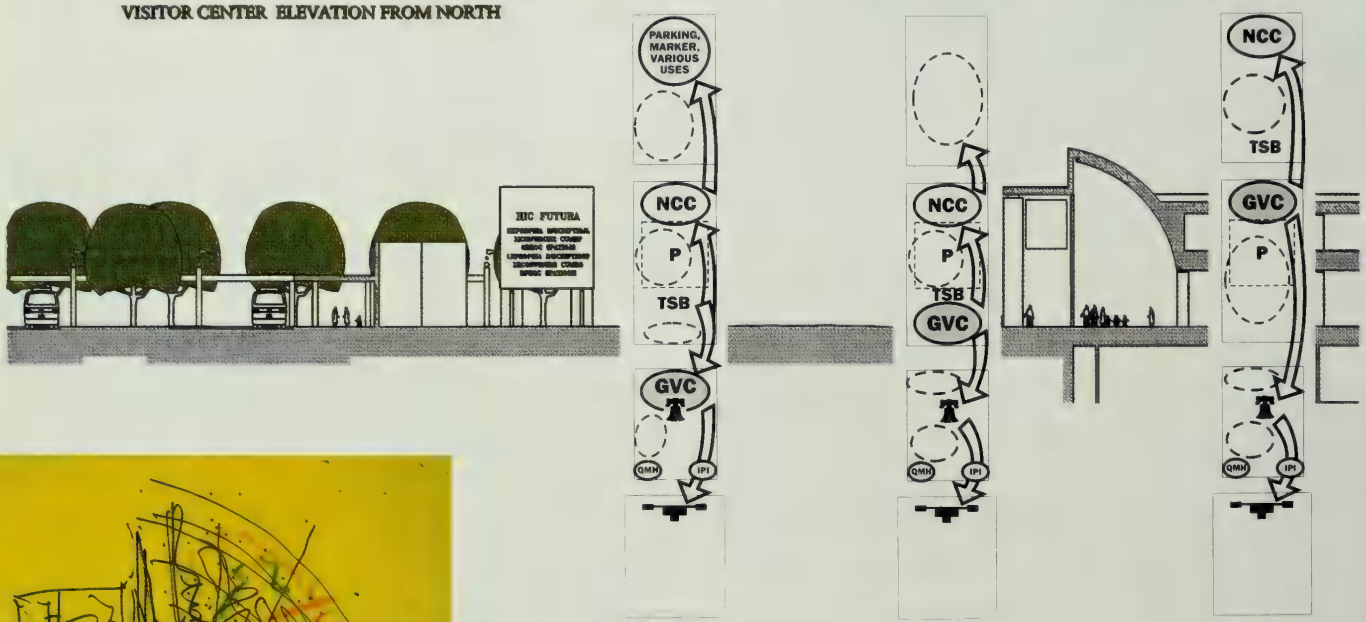
Postmodernism's bag of tricks—the trabeated quotations, the collaged Classical quips—has over the last few years vanished from the scene. Modernism is back, but it conspicuously lacks an ideological or theoretical basis. Uniquely among firms associated with Postmodernism, Venturi Scott Brown and Associates have not only stayed the course, but have moved farther into what they see as the future—a malleable architecture of applied electronic information. In excerpts from interviews with RECORD editor James S. Russell, AIA, partners Robert Venturi, FAIA, Denise Scott Brown, RIBA, and Steven Izenour, AIA, reflect on the directions their work has taken within a design culture that only seems to have left them behind.

INDEPENDENCE MALL

In the 1950s a vast open mall was cut in front of the modestly scaled Independence Hall in Philadelphia. To correct this deadening presence, VSBA analyzed the relationship of new to existing functions (diagrams) and proposed a gallery with large-scale imagery to attract nearby drivers (elevation and sketch below).



VISITOR CENTER ELEVATION FROM NORTH







PHILADELPHIA ORCHESTRA HALL

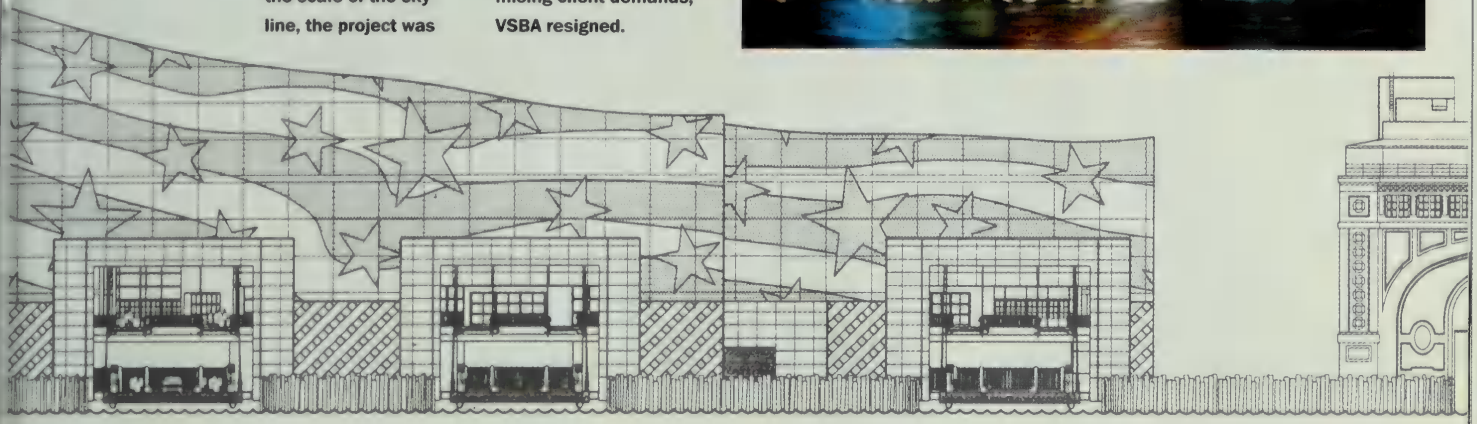
VSBA first designed a simple brick exterior for this new performing arts complex (middle right). Hobbled by fundraising woes (blamed in part on the design's austerity), VSBA redesigned the project with a "gala" facade that reflected Philadelphia's emerging vision of Broad Street as an "avenue of the arts." Its friezelike zipper sign, reflective musical notes, and multicolored backlit glazing mix Classical metaphors (derived from an adjacent Greek Revival building) with Miesian and multimedia references (right). The Orchestra Association has since selected another architect, Rafael Viñoly, hoping to marshall greater community support.

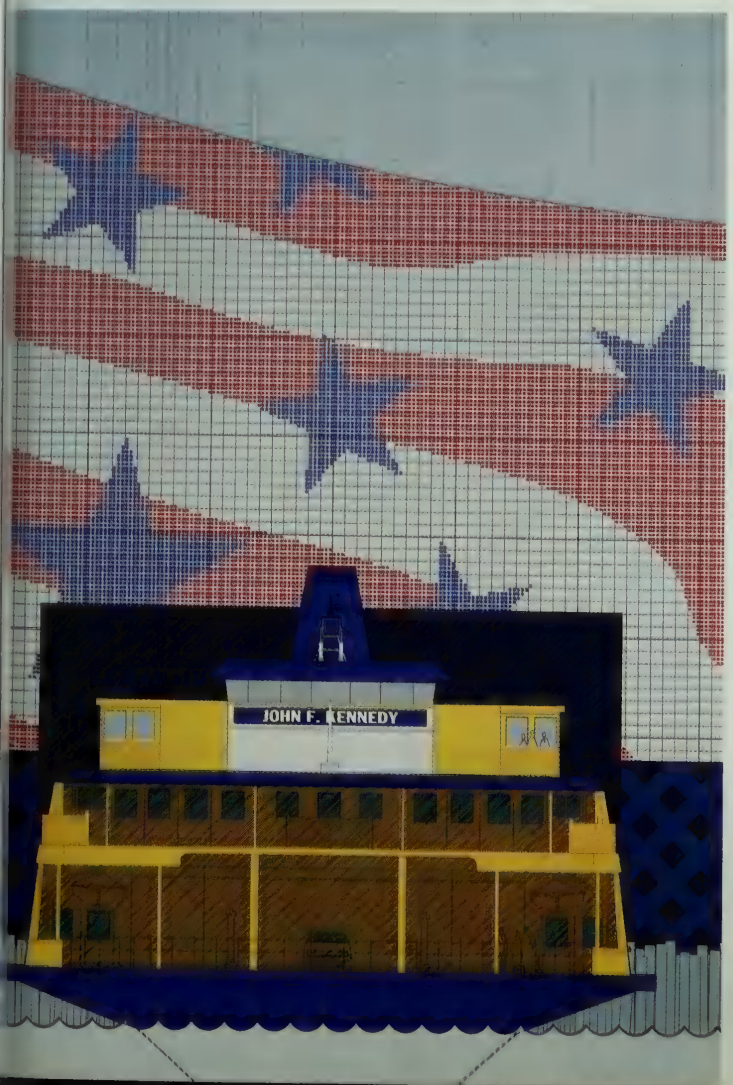


WHITEHALL FERRY TERMINAL

VSBA won a competition for this project at the southern tip of Manhattan. Based on a design whose superscale clock referred to the scale of the skyline, the project was later trimmed for a smaller budget and the waterfront facade became an LED billboard (this page). Later, citing further design-compromising client demands, VSBA resigned.







RECORD: Your recent work shows a new vitality. Does this represent a new direction?

DENISE SCOTT BROWN: It's the same vitality. To think it's new is to misunderstand what we were doing when everyone else was doing Postmodernism. We have always said it is a misinterpretation to regard Postmodernism as coming out of our books *Complexity and Contradiction in Architecture* [Museum of Modern Art, 1966] and *Learning From Las Vegas* [MIT Press, 1972, 1977].

ROBERT VENTURI: Herbert Muschamp of the [*New York*] *Times* wrote that *Complexity and Contradiction* served to make history legitimate, but he missed the idea. We used historical analogy to make points. Our use of history is to derive understanding. Just as Mies van der Rohe made buildings that were distinctly derived from an industrial vernacular, so we derive from the commercial vernacular. It's from this that we argue that there is room for a greater use of graphics and iconography on buildings.

DSB: Behind what we did in the beginning was a social planner's critique of architects—the set of values that architects feel the whole world should accept. We asked, what about looking and seeing what things are actually like? We went to Levittown and Las Vegas to see how people voted with their feet. A lot of social planning thought was expressed in these writings, but it was never read or seen by architects.

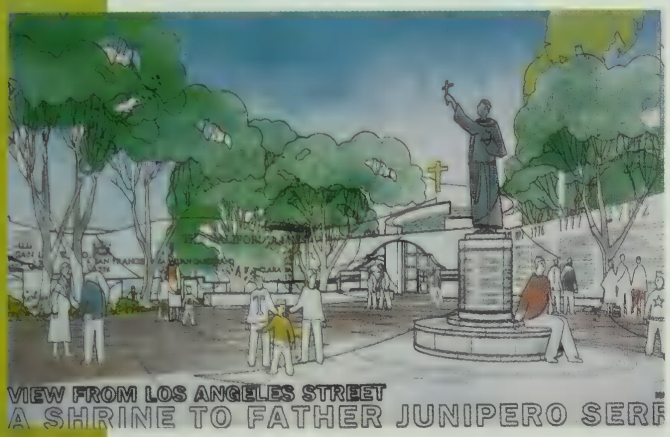
In Venturi's recent book, Iconography and Electronics Upon a Generic Architecture: A View From the Drafting Room *(MIT Press, 1996), he renews his pleas for an "architecture as shelter and symbol" while decrying what he describes as a Modernist revival, with its "exposed-frame structure symbolizing 19th-century engineering—while everyone knows the Industrial Revolution is dead." Since the fading of Deconstructivism, there seems to have been remarkably little examination of resurgent Modernism's ideological underpinnings.*

RECORD: One could see in this Modernist revival a recapitulation of the heroic architectural era that you successfully punctured in the early writings. Is it a rejection of what you've stood for?

RV: Abstraction has dominated the aesthetics of the century, but it's easy to forget that it is an unusual phenomenon. We found that every period



The firm's graphic skills and Denise Scott Brown's urban design experience were brought to bear in a site analysis submitted for the Peabody Essex Museum in Salem, Massachusetts (left). The firm enlivened a large, loftlike building housing Walt Disney Company animators by printing film reels on the enameled metal exterior (opposite bottom). The images are the "fanfare" exception to the building's simple facade rhythm.



A shrine to Father Junipero Serra, in Los Angeles, uses a series of curved, interlocking walls (sketch left) to draw visitors in, protect them from freeway noise, and tell the missionary's story (left).

of history has dealt in the ornate and graphic and the symbolic and the referential—the ancient Egyptians had the equivalent of billboards.

This expressionistic movement is a last gasp at getting some nonboring element into abstraction. Abstraction was great in its day—I worshiped La Tourette and Fallingwater and recognize that they are original and not referential. But there is no theoretical basis left in abstraction. It is expressionism and it is empty, just as Decon[structivism] was totally about that which is exceptional, which means it is not exceptional at all. The funny irony is that architects are reviving an industrial vocabulary that is historicist in a postindustrial age.

In his book Venturi asks us to acknowledge signs, reference, representation, iconography, scenography, and trompe-l'oeil "as the genesis and basis of the art of architecture."

RECORD: Few designers today seem to acknowledge these elements. Are we uncomfortable with symbolism in architecture?

RV: When I was young, the most daring, radical thing you could do in civic art was to put an abstract piece of sculpture in a plaza. Ironically, now that is the safest thing to do. No one gets mad at it because there is no symbolism. We are living in a time of great incivility—it's a talk-show environment. So if we propose to put up something that has meaning and symbolic content, people will get mad, and it won't happen.

I think there is a similar fear among architects. The avant-garde is very old-fashioned. It's still reacting against Victorian symbolism and the Ecole des Beaux Arts.

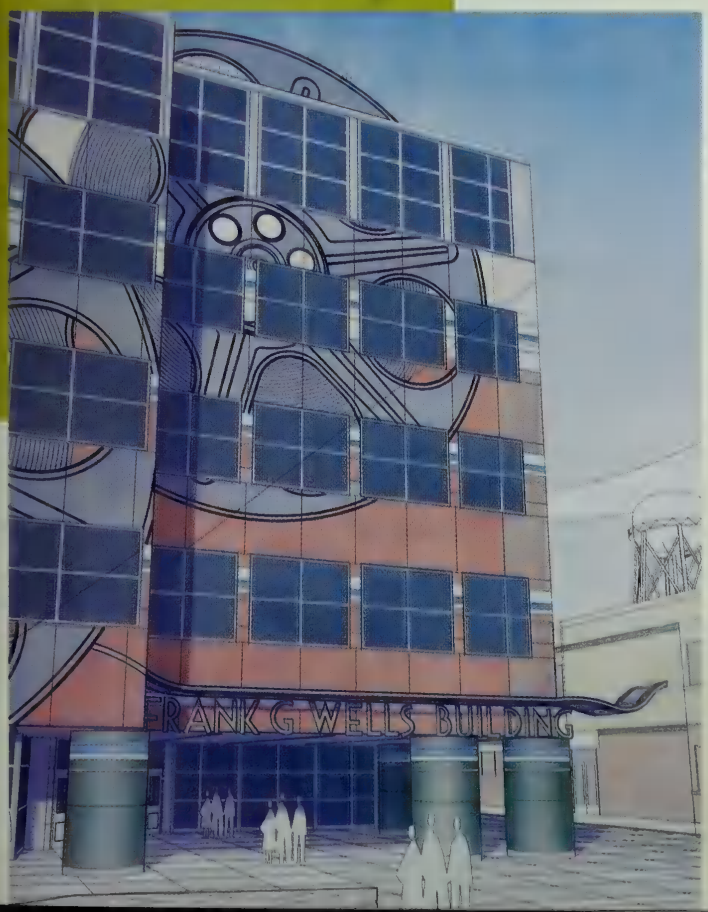
Revisiting Las Vegas, Robert Venturi reflects, in Iconography and Electronics, *"we recommended taking a non-judgmental approach to taste and accommodating to pluralism and relativity."*

RECORD: When architects first read this, many were furious. If architects were to be merely nonjudgmental and accommodating, what was to be their role?

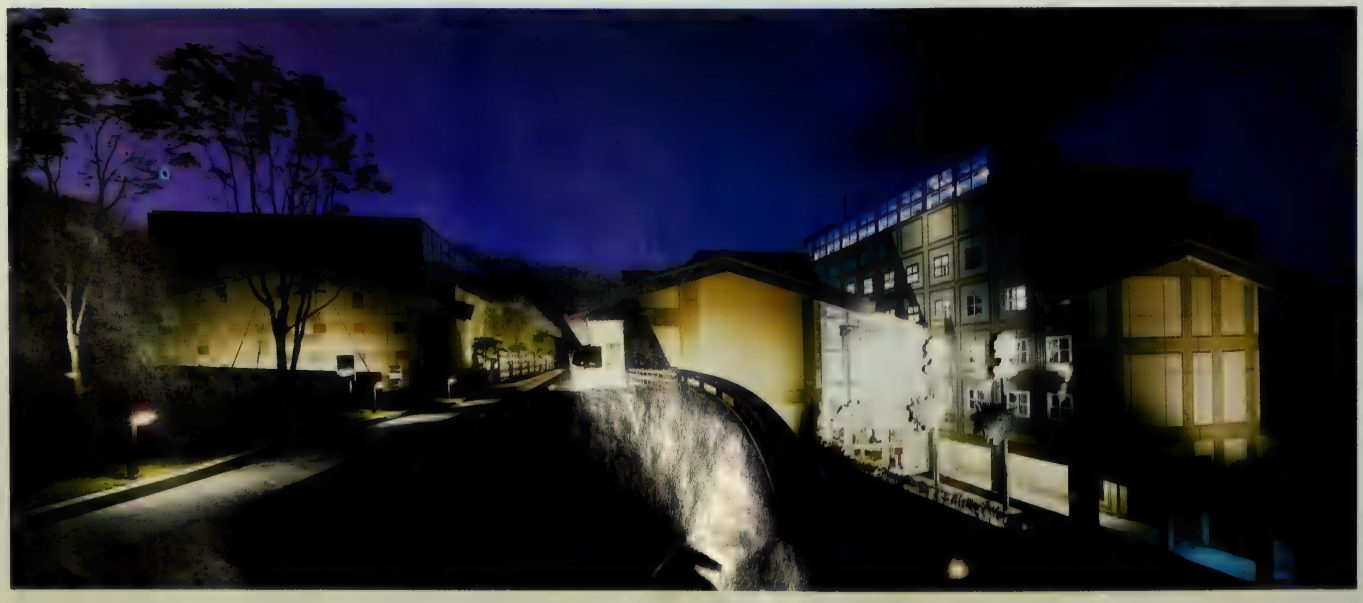
DSB: At the time, people said such things as "If your prescription had been followed, there would never have been voter registration in Alabama." We didn't propose a prescription for society but a working method for architects. I think we've shown that there is very much a role for the architect. But we have always said it is better to defer judgment so that you can make subsequent judgment more sensitively.

RECORD: While deriving a great deal of inspiration from the commercial landscape, you have actually done relatively little commercial work.

STEVEN IZENOUR: When you draw inspiration from popular imaging and popular culture, it doesn't make you easy to market even in dealing with relatively sophisticated people. We still have more unbuilt projects than built ones for [The Walt] Disney [Company]. Clients don't see or don't understand where we're coming from.









NIKKO KIRIFURI RESORT

Working with the landscape architecture firm Andropogon, VSBA choreographed a forest and mountain views in the arrival sequence to this 97-room resort adjacent to Japan's Nikko National Park, which contains important shrines. Patterns applied to the complex evoke vernacular Japanese architecture.



DSB: We are thinking about the commercial and working with the civic. In our entry for the U.S. embassy in Berlin [RECORD, March 1996, pages 40–41], we have an electronic LED sign as a kind of lining, somewhat hidden behind a very civic facade. This is one way of dealing with the civic dimension. Our institutional clients have been cordial to the idea of electronics on architecture—more than we would have expected—so we've been able to do them, but mostly inside buildings.

RV: Another aspect of our work that people seem to have a hard time getting and makes us so opposite of the "original signature genius," is how we value the generic building that allows flexibility over time—the New England mill, the loft, the palazzo. The Italian palazzo was the same for 400 years except for the ornament on it. It was a building that could be used in many different ways, which goes against the Modernist notion of making a glove for the hand rather than a mitten. The related point is that the architectural content comes more from fanfare applied, not form-distorting abstraction. You know Princeton University's Nassau Hall is not a mill because it has a fancy door and a cupola on top. It's fanfare that can be more or less graphic or iconographic.

RECORD: It seems to me that the loft idea has not been as criticized as some other aspects of your work. Stewart Brand, among others, has endorsed much the same idea in his book *How Buildings Learn.*







The internal focal point of the Nikko resort is a skylit pedestrian street enlivened by ornamental signage that evokes both rural and urban traditions (top and right). Metal-framed "leaves" over spa pools (above) are green on one side, autumnal yellow on the other.



Robert Venturi, Denise Scott Brown, and Steven Izenour pose in their offices in Philadelphia's Manyunk district.

DSB: They criticize the idea of the loft because it seems lower class.
RV: I think it hasn't been criticized as much because many people don't get it.
DSB: The people who do get it are college campuses. We have been approached more and more to do campus planning. These plans have a lot to do with patterns of activities and how they must change and how their strategies must therefore be generic. Many campus people recognize that the buildings will be there after their lives are over and will have to change. They get the difference between academic change and physical change.
SI: There's also a new kind of institutional client coming in. They are having to deal with a much more complicated commercial world—call it Disney style—and they want us to show them how they can do something with a great deal of panache. The line between the traditional institutional world and the commercial world has become much vaguer at zoos or aquariums or at the Camden Children's Garden, our client. They realize they are competing for dollars with the amusement park 10 miles away. Everybody has talked about this blur—the so-called Disneyfication of the world. Looked at positively, it is good because it focuses institutions on competing, on attracting people. It forces them to look at their ideals critically.

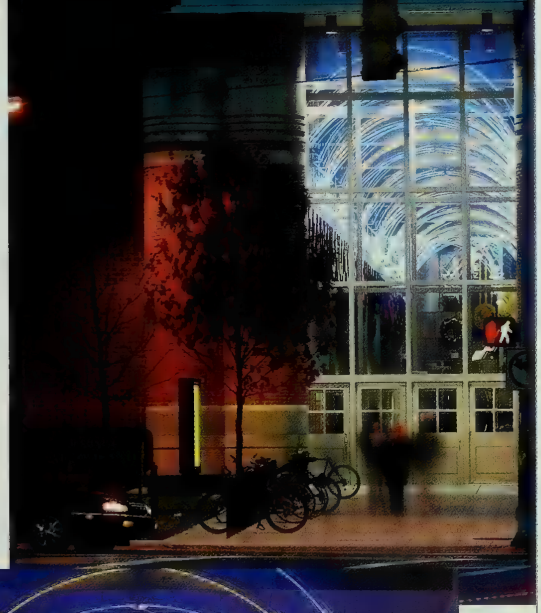
"I am, as a practicing architect . . . a supplicant to bureaucrats representing clients or agencies, each of whom focuses on enhancing his image, to historical commissions, who fear making history in their time, to design review boards, who promote deadening urbanity (while expounding my partner's and my ideas of some decades ago), to goody-goody community boards with too much time on their hands."—Iconography and Electronics

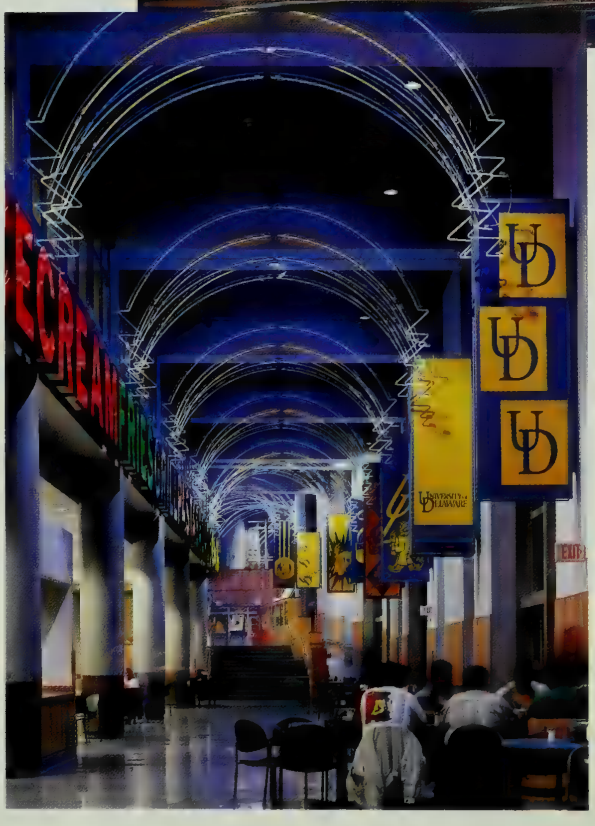
RECORD: Why have civic projects proven so difficult for you?
RV: Our main clients are institutional, but we're considered too extreme for civic clients because today there is this process of everyone designing the building. Community participation is great, but we are at a point that three of our civic jobs are not going to go ahead because of outside imposition on our ideas that we couldn't accept.
DSB: I came up through the community-activist tradition and used that system and worked with little main streets and impoverished neighborhoods in large cities. We still use that model, but large interests also use the system for private agendas. In every city everyone from the mayor on down has an agenda that is disguised as a public purpose.
RV: Community participation is a beautiful idea that is often misused.
DSB: It's more about upper-middle-class residents these days.

With the very validity of architecture continually being called into question, especially in a world dominated by commercial values and images, public clients may hunger for the very architectural values Venturi and Scott Brown disparage: the heroic statement, the quest for order or a universal language to counter the chaos of the commercial landscape.

RECORD: In restoring the urban context of Independence Hall to an 18th-century scale, you proposed a visitor center with a billboard-scale arcade faced with "whammo" electronic or mural-like imagery. Didn't that undercut the client's intention?
RV: You would never see the gallery and Independence Hall at the same time. It needs to be flashy as hell in a 20th-century way to attract the visitor and the passerby. But you have to be flashy in the right way.

(continued on page 252)





TRABANT UNIVERSITY CENTER, UNIVERSITY OF DELAWARE

This student center is "Georgian in spirit" to match the campus' prevailing style. It presents a narrow facade to the street so as not to overwhelm adjacent house-scaled buildings. A glazed entry invites students into an arcade, which extends a key existing pedestrian way. Reflecting its mall-like function, the interior is enlivened with scaled-up electric signage and neon arches.

CHANDIGARH *after* CORBUSIER



OUR ROVING CRITIC COMPARES CORB'S CITY TO NEW DELHI AND LUTYENS'S ORDERED WORLD.

by Michael Sorkin

An indelible image of India. As I prowled the New Delhi acropolis, a truck pulled up in front of one of the Herbert Baker ministries flanking the grand, Lutyens-culminated, King's Way axis. On the truck was an enormous model ship—the Indian navy's latest frigate—bristling with plexiglass missiles and guns. Thirty men in ragged kurtas and bare feet, directed by a naval officer in crisp white uniform, shouldered the ship and shuffled, whooping and shouting, through the portal of the vast Euro-Moghul pile.

This surreal sense of juxtaposition is ubiquitous in the daily life of India: the cows on the highway, the bright sari-clad women hoisting baskets of concrete up webs of bamboo scaffolding to build air-con skyscrapers in the merciless haze and heat, the Coke ads on the mud huts. Like that ship, the apparatus of modernity is supported on the backs of huge numbers whose share in its benefits is marginal. India is filled with such reverberating differences, with a colonialism that both imports its own values and coopts sympathetic images from within the culture that are then rebroadcast in transformed guise.

Double Delhi embodies this structure of differences very directly. Old Delhi, the eight-times-rebuilt capital of ancient India—most famously as Shahjahanabad, the last capital of the Moghuls—is a tangle of crumbling buildings, impossible traffic, twisting lanes, warrens of life, and frenetic commerce. New Delhi, built by the British as the last capital of the Raj, inverts all of this, filled with endless tree-lined axes and round-points, stately buildings and white-washed bungalows for the white sahibs, all deployed in insane lateral hierarchy to recognize just where in the civil service their occupants sat.

While this twoness monumentally reflects the center of power of colonial India, the division was reproduced across the country and, indeed, across the empire. In town after town, the so-called civil lines were established as a parallel urbanism, a formal apartheid that left little question as to who was in charge. In a country whose Hindu tradition was rooted in its own fantasies of untouchability, those revolutionaries who sought to overthrow such structures of permanent inequality must certainly have understood and reviled this division, much as the British found Indian settlements "unhealthy, noisy, and distasteful."

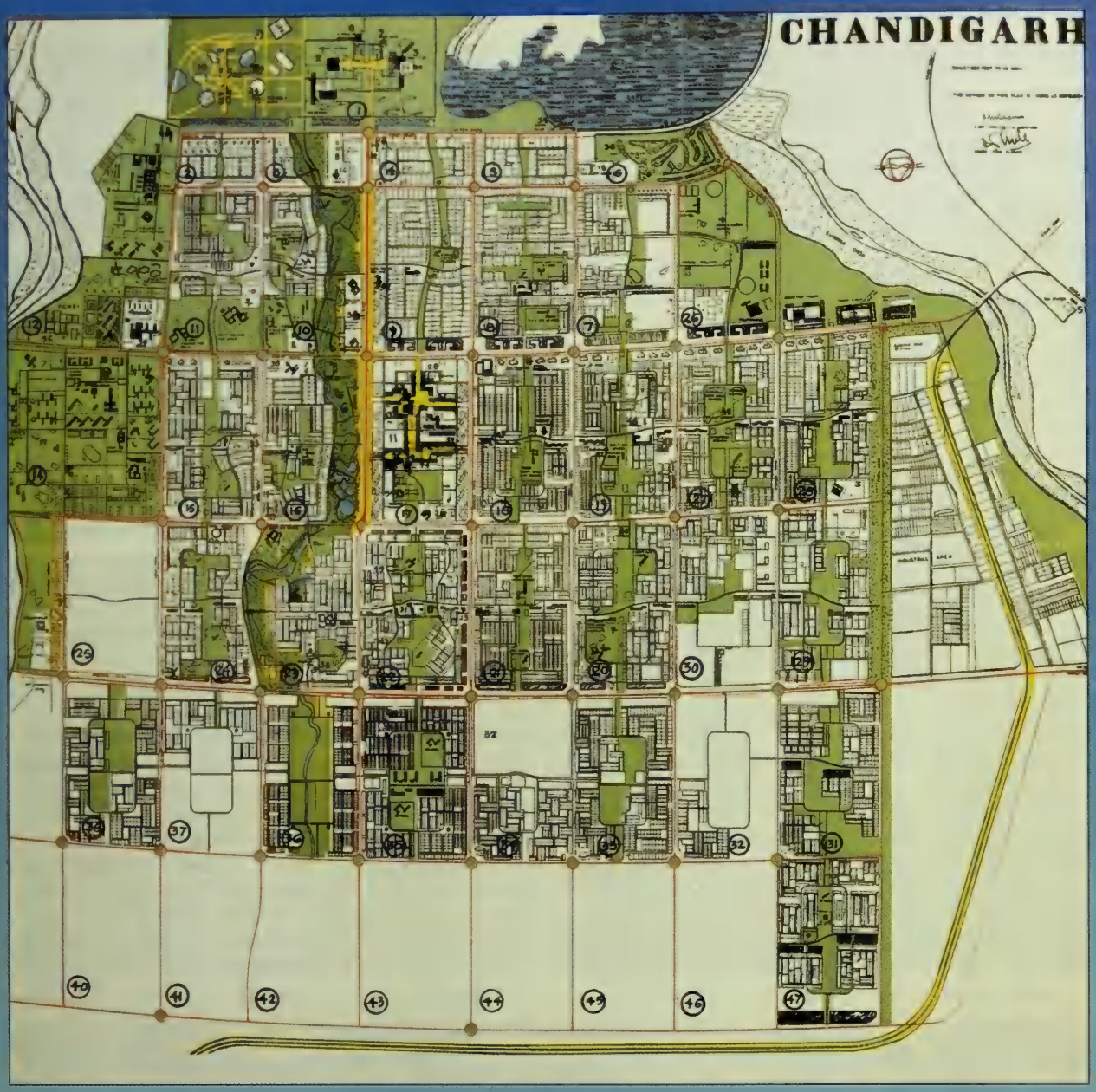
This repeated pattern of Indian town, military cantonment, and civil lines, each obeying its own systems of order, each imposing its own hierarchy, still resonates, embodied—if in transmogrified form—in the elements of a continuing debate about planning. On one side stands a tradition that favors clarity, the sort of urban functionalism that remains the default mode of global urbanism and architecture. But there's another way, also tremendously "Indian": the path of synthesis, the embrace and collapse of contradiction. This struck me very powerfully. In much of Indian architecture the combination of motifs, the easy blending of Hindu, Muslim, Buddhist, even Christian symbols is marvelous, even transcendent. But, in a country where internecine massacres are still an almost everyday affair, such blendings can be fraught.

Lutyens's Delhi: orderly space or nadir of colonialism?

The architect who was showing me around that day was a Delhi enthusiast, partial to Edwin Lutyens and to the calm sweep of the grand, bowered avenues. And, after a couple of weeks in India, it was easy to share his appreciation for an orderly, shaded space free from the roiling maelstrom of typical Indian traffic. More problematic, though, was his tolerant position vis-à-vis the Lutyens style of grafted locality. Of course, the *tolerance* was admirable, but, interestingly, it had its limits, concealing a polemic repeatedly exposed in conversations with architects around India. While my friend loved Delhi, he was filled with contempt for Chandigarh, which he considered to be the real symbol of imaginative colonization. The next day, when I reported the apparent paradox to another Indian architect, he virtually exploded on hearing it, railing against Lutyens as the nadir of colonialism and racism and exalting Le Corbusier's city as a place that had

Contributing editor Michael Sorkin runs his own architectural practice in New York City. A monograph on his architecture, Michael Sorkin Studio: 2nd Nature, *will be published by the Monacelli Press later this year.*

Chandigarh's plan (inset opposite), adapted by Le Corbusier from one by Albert Mayer and Matthew Nowicki, is seen on the city's manhole covers (above). A view of the government complex (opposite).


CHANDIGARH



INDIAN DUALISM: ON ONE SIDE, A TRADITION OF CLARITY, OF URBAN FUNCTIONALISM; ON THE OTHER, A PATH OF SYNTHESIS, AN EMBRACE AND COLLAPSE OF CONTRADICTION.

helped to set India free, to move its architecture along a fresh and independent path.

One sees what one wants. My Delhi friend told me a story about driving Robert Venturi on a similar tour around town. After intoning his predictable enthusiasm for the helter-skelter signage encrusting the buildings of Connaught Place (and the ubiquitous layers of Indian graphic funk are amazing), he came to the Lutyens complex atop Raisina Hill. He entered in a reverie, as if to a great shrine. My colleague reported with admiration that Venturi strode through the building as if he'd been there many times, pointing out details and seeking out hidden rooms with complete familiarity. He already knew, already loved, the building.

Indian urbanism has its own rationality

The frequent reduction of the juxtaposition between Indian and European modes of urbanization and the assignment of rationality to the European side, though, is both pernicious and wrong. The rich history of Indian urbanism is filled with its own styles of rationality, which bear direct comparison with Western models. India, with its elaborately systematized spirituality and social relations, is a place in thrall of abstraction, not simply as a hedge against the awful oppressions of daily life but as a broader means of reconciliation.

This penchant for abstraction is very Indian. The early Vedic manual of architecture, *Vastu Shilpa Shastra*, the *feng shui* of India, with its characteristic synthesis of spirituality and common sense, offers a strategy for harmonizing architecture with the basic forces of the universe by, in effect, creating structures that absorb maximum available benefits from the character and "energies" of the site—concretizations of the abstract. The premise of the text is that the originating act of architecture is the earth itself. Inherent in this theory are beautiful, implicit ideas of stewardship and continuity, which ought still to form a basis for our thinking. Like rationalism, though, this geometricization of spirit, this rendering of one abstract system into another, works because geometry is the substance of architectural description. As with our own styles of rationality, this system is thought to aid human physical, psychical, and moral development. The urbanistic high point of its application is the 18th-century planned city of Jaipur, whose eponymous author, Jai Singh, was a virtual paragon of modernity. His city is based on a supple application of a nine-square plan, a symbol of order as much at home in a Palladian villa as the famous Navgraha mandala.

Indian streets as places of spontaneous democracy

The urban quality that struck me most forcibly on my trip to India, however, was its traffic, the apparent antithesis of harmonization. Seething circulation occupies a space from building front to building front and—at first blush—seems to defy any rationality. Streets literally teemed with people moving with and against traffic, with cars and buses and trucks, motorcycles and rickshaws, horse carts, occasional elephants, and, of course, those ubiquitous cows. And yet, somehow, it seemed to work: from the cacophony and chaos, a harmony emerges. Indian streets are a place of continuous negotiation over space, filled with a kind of spontaneous democracy, an extremely localized view of order subsisting within a larger (and largely impenetrable) pattern. Indeed, one might say it is the very chaos of the streets that makes them tractable. Unlike the uncrossable motorways, which are beginning to appear in India, it is precisely the congestion that makes it possible to cross the street.

These ruminations on the character of Indian public space were deepened by an experience of several days of juries at the excellent architecture school in Ahmedabad. While the strictly architectural aspects of the student projects were of a high standard, a curious quality seemed to pervade most of them. Outside the envelope of individual buildings, the



Lutyens's Viceroy's House (left) in New Delhi, completed in 1929, sits on a hill above the city.

In Chandigarh, the Assembly Building (opposite bottom) anchors one end of the civic plaza, with the High Court at the other end. On a cross axis to these buildings stand Le Corbusier's Open Hand sculpture (opposite top) and a large bermed monument, the House of the Winds.

sheets were largely blank, festooned at best with a tree or two. There seemed to be a resistance to elaborating the spaces of public activity, to determining the routines of encounter with public motion. As I continued to travel, I came to see this as no anomaly, and the quality of a minimally structured shared realm continued to impress me. As a medium for mixing and sorting out seemingly impossible numbers and phenomenal diversity, this lack of differentiation increasingly took on the character of a strategy rather than an accident. Certainly, this condition of density serves as subtext for the apparent force and contrast of the nominal rationality of such urban schemes as New Delhi and Chandigarh.

Chandigarh: the temple of new India?

It surely helps that Chandigarh is small. Planned for 500,000 and now grown to around a million (although it feels like less), its scale is tractable, in contrast to the impossible density and extent of cities like Bombay or Calcutta. Compared to these cities, Chandigarh is far more uniformly prosperous and extremely clean. Local industry is limited, and the city is becoming a magnet for hi-tech firms. While Bombay—home to the largest slum in Asia (a fact some locals refer to almost pridefully)—has a population of over 12 million, of which half is squatters living in appalling conditions, the utterly poor in Chandigarh number 10 to 15 percent.

The original plan for Chandigarh was drawn by Albert Mayer, joined by Matthew Nowicki, who began to work on individual buildings. Mayer had been friendly with the Indian nationalist Pandit Nehru, who recommended him for the job and who remained the project's alter ego and protector to the end. More than any other, Nehru believed in the symbolic importance and necessary modernity of this first great construction project of the new nation. At the town's 1953 inaugural, Nehru declared it "the first large expression of our creative genius, flowering on our newly earned freedom . . . unfettered by traditions of the past . . . reaching beyond existing encumbrances of old towns and old traditions . . . the temple of new India." Le Corbusier's account of this collision with modernity was somewhat more jaded: "What is the significance of Indian style in the world today if you accept machines, trousers, democracy?"

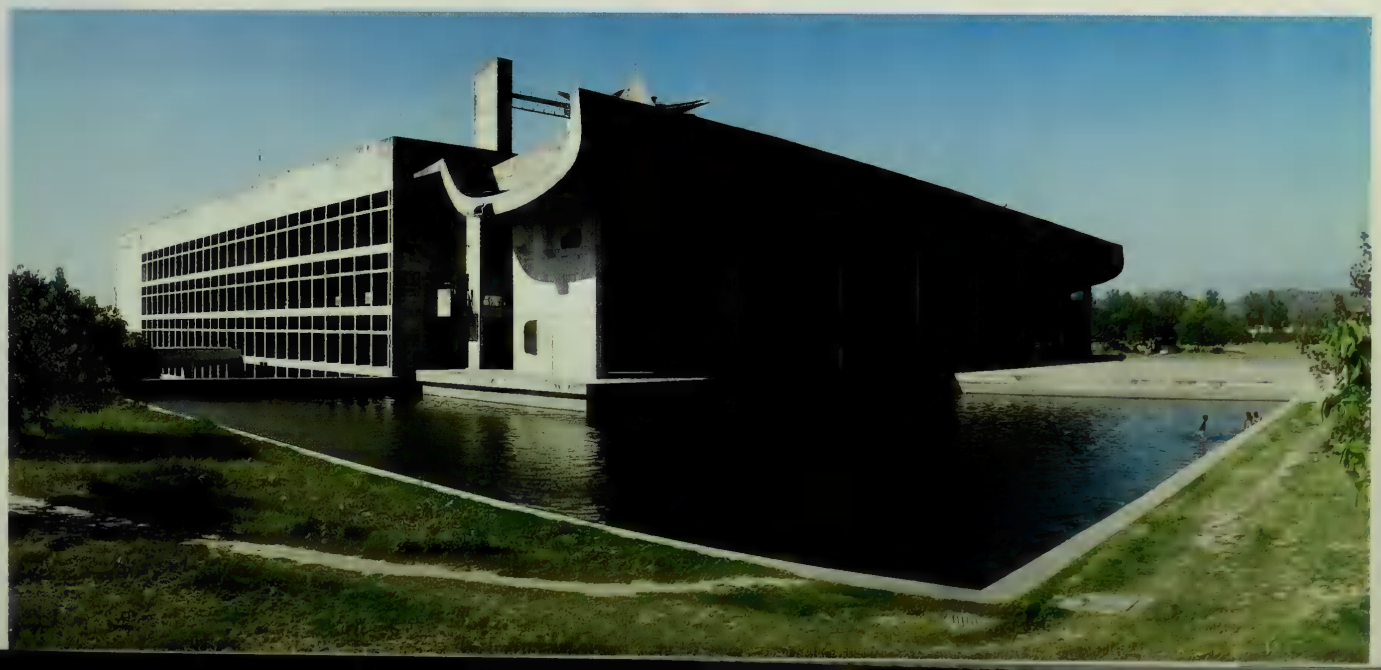
While Corb retained the essential diagram of Mayer's plan—a grid of superblocks with a commercial core and a governmental precinct as its head—he obviously found the curving, Radburn-like streets too picturesque and straightened them out into a more rationalist grid. Corb's understanding of the city was typically—and modernly—undergirded by a sense of circulation. For him, the new city was to be about clarity and speed ("the city that has speed has success"), about unimpeded flow.

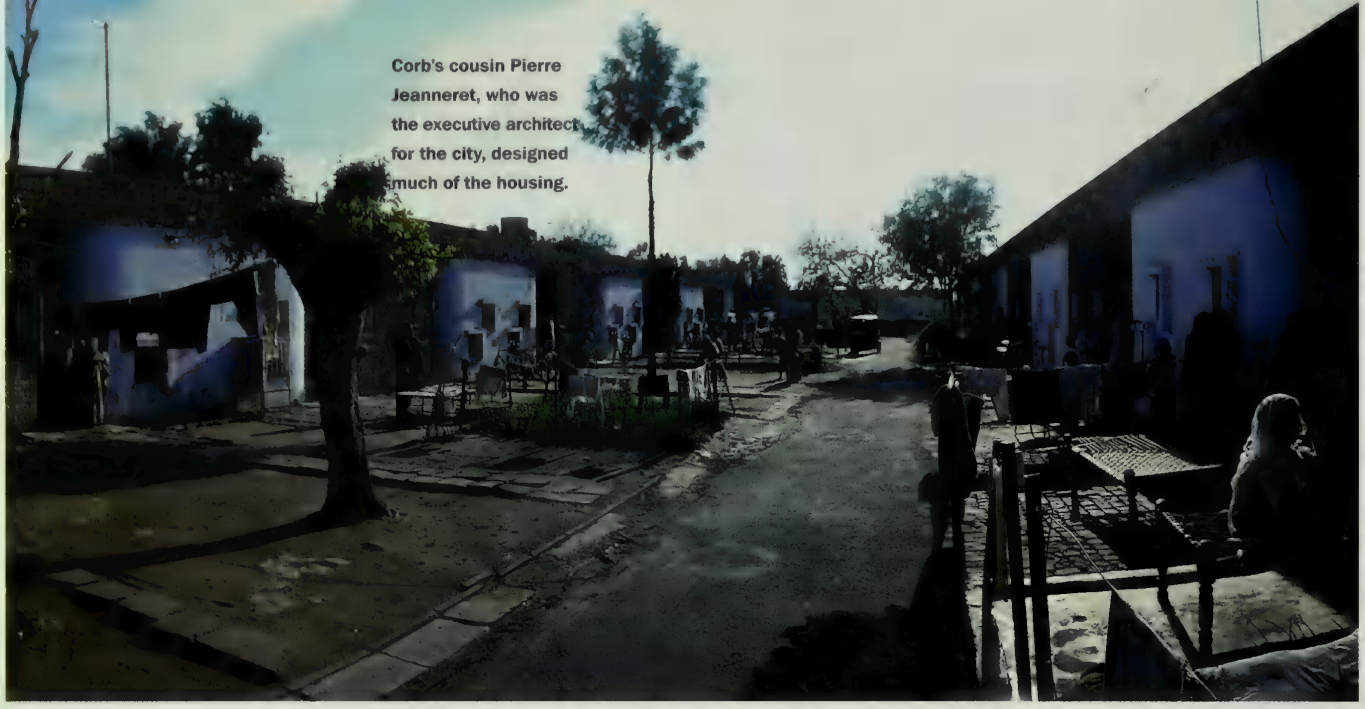
The curved line is the line of the donkey

Famously, he had deplored the idea of a city finding its form through the meanderings of oxen but now found himself in a country in which the privileged movers were cows, who enjoy complete freedom of the road in India. In *Urbanisme,* Corb had written, "man walks in a straight line because he has a goal and knows where he is going. The straight line is the line of man, the curved line is the line of the donkey."

Donkeys notwithstanding, Chandigarh's most fundamental physio-conceptual flaw is its attempt to impose the engineer's rationality on the city universally via a strategy of separation, erecting barriers to the typical Indian means of frustrating such hierarchies. Traffic is organized by a system that imposes too many handicaps to mingling, based on the







Corb's cousin Pierre Jeanneret, who was the executive architect for the city, designed much of the housing.

modernist paradigm of smooth flow and separation of traffic—the seeming opposite of the indigenous condition. Designed from the position of the car, it inconveniences both the pedestrian and the bicycle, the logical means of transport in a city that is both flat and compact. Giving alpha status to the car does fulfill its own prophecy: the very generously dimensioned system is largely able to cope with the town's motor traffic.

The seven-fold hierarchy of street types (the famous "V" system of roadways in Chandigarh is a rationalist nightmare out of Mr. Hulot) is the medium of this strategy, but it has been partly sapped of its rigidity by an encrustation of improvisation, modification, and the makeshift, by bazaars in the parking lots and bikes on the motorway. But the surfeit of curbs and medians and the humongous street widths remain inconvenient. Likewise, the Delhi-style caste-colonial lexicon of housing types—14 categories ranked to precisely reveal status by size, elevation, and proximity to the symbolic center, the upland capitolium—is a flawed approach, certainly in a democracy. The generic architecture of the city is surely too monochromatic. The commercial center remains dry.

A coherent sense of neighborhood

But, this having been said, Chandigarh is beautiful. Insanely generous in green space for any Asian city, it stands in tremendous contrast to the pollution and turmoil typical of Indian urbanism. The city has an extremely manageable scale (I did my touring on a bike), wanting only a slightly more logical and more sustainable attitude to the mix of transport means and a series of relatively minor modifications to its streets to reverse the privilege of motor traffic in favor of walkers and bikes. And the superblock system has always had the potential to be both subtle and viable, to create a richly textured modern Medina, a really autonomous and coherent sense of neighborhood. What's missing is enough layers deployed in simultaneity, more of the richness of the convulsive Indian styles of compaction and the side-by-side. Chandigarh still needs to acquire the sense of both/and, a deeper patina.

For years I've heard the standard [illegible] of Corb's government precinct in Chandigarh: inhuman in scale, lost in inarticulate space, a sun-parched monument to bureaucracy. In fact, the site is magnificent, slightly elevated, surrounded by green, with a beautiful mountain backdrop. Clearly, the complex riffs the Lutyens acropolis at Delhi with its axial approach and formal ensemble. Like New Delhi, the grand distances are not meant to be convenient but impressive and symbolic. But if the King's Way was terminated by the palace of the Raj, Chandigarh has another iconography in mind. Approaching, the roadway leads only to emptiness, splitting in two, the court to the right and the legislature to the left. In the original plan, a governor's residence is more or less in the axis-culminating position. But compared to the other structures on the hill (or to the Palace of the Raj), the building was quite small. The servant of the state was to live well but to know his place, hemmed in by the grandeur of the courts and the legislature.

A spray of abstract iconography

The precinct is further animated by Corb's own spray of abstract iconography—the sculpture of the Open Hand and the concrete-braced berm called the House of Shadows. I visited several times, and the highlight was at dusk, as the heat of the day ebbed and the plaza became the reserve of bikers and skaters and wheeling black birds.

Next to the Corbusian acropolis stands an astonishing anti-Chandigarh, the Rock Garden, the town's most popular attraction. Built over many years by Nek Chand, an engineer on the Indian railways who continues to expand the project, the garden is an explosion of folkloric construction, Simon Rodilla meets Antonio Gaudí. Where Chandigarh is geometrical, the garden is free-form and eccentric. Where Chandigarh's materiality is limited and precise, the garden's is convulsive, odd, and eclectic, from boulders to broken porcelain electrical fittings. Where Chandigarh is flat, the garden is all cliffs and gorges. Where Chandigarh is too legible, the garden's routes meander, dead-end, and double back. It's a beautiful place and easily the most brilliant and concrete critique ever rendered of the city. And yet it fits. Much as Corb's plan opposes order and nature in a familiar European way, with overgrown parkland flowing through the city, so the city assimilates the garden as a carefully enclosed icon of otherness, the order not taken.

The garden is a kind of ghetto. Chandigarh is a monument to

CHANDIGARH IS BEAUTIFUL.... WHAT'S MISSING IS MORE OF THE RICHNESS OF THE CONVULSIVE INDIAN STYLES OF COMPACTION AND THE SIDE-BY-SIDE.

the prescriptive, the desire for everything in its place. One often reads in sympathetic accounts of Chandigarh's origins of Corb's affinity for the Indian environment, his intuitive reading of its historic architecture and spaces, emblematized by his cheery cartoons of big-horned Indian cows (although—in a familiar split—others call him superficial, his only knowledge of Indian culture coming from hobnobbing with the rich and looking out the car window). But it's also clear that Corb's rigid and antique sense of social hierarchy dovetailed precisely with an Indian mode of social division. India continues to be crippled by caste, a place in which hierarchy is hereditary and inescapable. In Chandigarh's almost insane attempts to impose a hierarchical system of classification on all dwellings, the mechanizations of European rationality conjoin with the ethos of caste to produce what is in many ways a nightmare.

Any city must answer the question of who is to live there. Naturally, a democracy prefers to answer "anyone." In a poor and stratified country like India, the consequences can be Bombay, with half the city unhoused. In Chandigarh, the initial response was to be "anyone with regular employment." The question of defining the limits of population, of course, is set at the low end of the scale. But how low to go? At the city's beginning, the entire early labor population was working on construction. The intention was for workers (often with their families) to live in self-built shacks on construction sites. These shacks were meant to be self-liquidating: when the building was completed, the workers were displaced, enacting a short-cycle episode of colonial exploitation and expropriation.

Such issues of class and mobility are truly clarified at the margins, and these margins are both social and spatial. To solve the problem of its homeless, Chandigarh has created a system meant to bring people from illegal settlements into transit camps, then self-built camps with limited services, one-room tenements, and finally into "regular housing." Of course, most do not make it, remaining outside the system. In Chandigarh—like Brasilia—the idea of marginalization has a particularly spatial quality: the poor are literally peripheralized in squatter colonies beyond the territory of official sanction, in a parallel city, unsusceptible to the rationales of order that shape the official zone.

A degree of everyday mingling

All cities are shaped by social strategies for housing and income mobility. Caste or class systems in their pristine manifestations are formulas for total immobilization. In India, though, the upper caste/class's self-blinded, tolerating eye (the same blinkering that lets us step over our own homeless) allows a degree of everyday mingling—the ubiquity of the "informal" sector is an astonishing fact of life everywhere—which our political culture, cheering the hounding of squeegee men from our streets, would not tolerate.

All towns confront similar issues of order, but new towns throw them into special relief. Whether at Brasilia, Chandigarh, or Celebration, the degree of prescription can be seen with intense, schematic clarity because the accidental has been largely excluded and because, in their youth, these places continue to be unmodified incarnations of initiating visions. While we tend to focus on the physical aspects of these informing prescriptions, such new towns also clarify the ideological constructs that undergrid them, diagramming clearly a fantasy of social relations.

The character of a society can be judged by the way it formulates its styles of compatibility, an issue that becomes more acute the greater the degree of stratification, and all of these towns paint a precise portrait of privilege. But Chandigarh—for all its frustrations and for all its entrapment in the problems of a very poor country—is an inspiring place. Not simply as an example of willed magnificence but of that most optimistic of acts, the building of a city. The world needs more Chandigarhs. ■





Although nearly 15 percent of Chandigarh's population live in squatter settlements at its periphery, the city has a system of 14 levels of housing. Modest homes (left) were designed by Pierre Jeanneret in the 1960s, while red-brick ones (above) are new.



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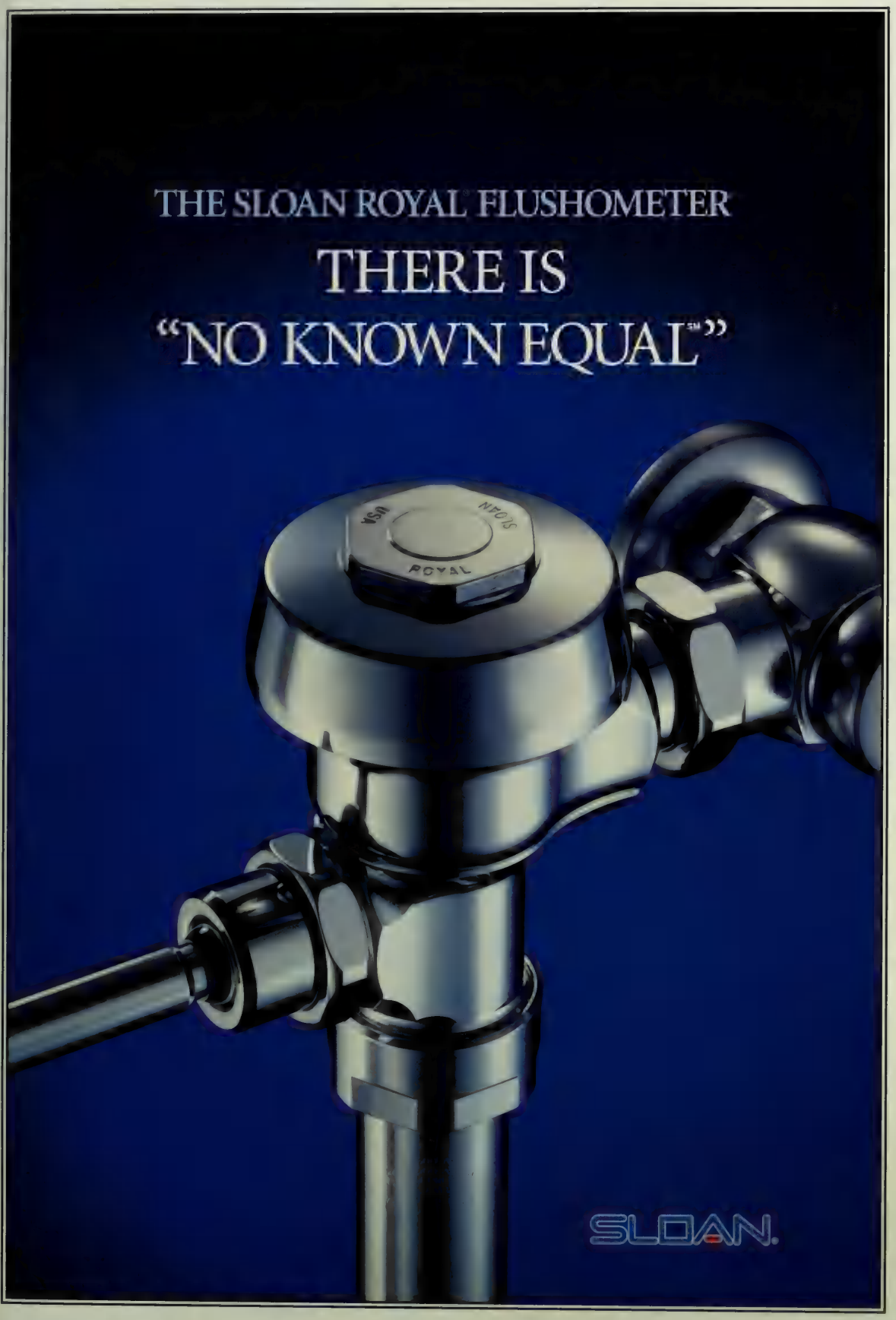
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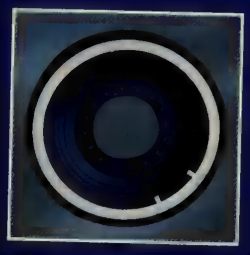
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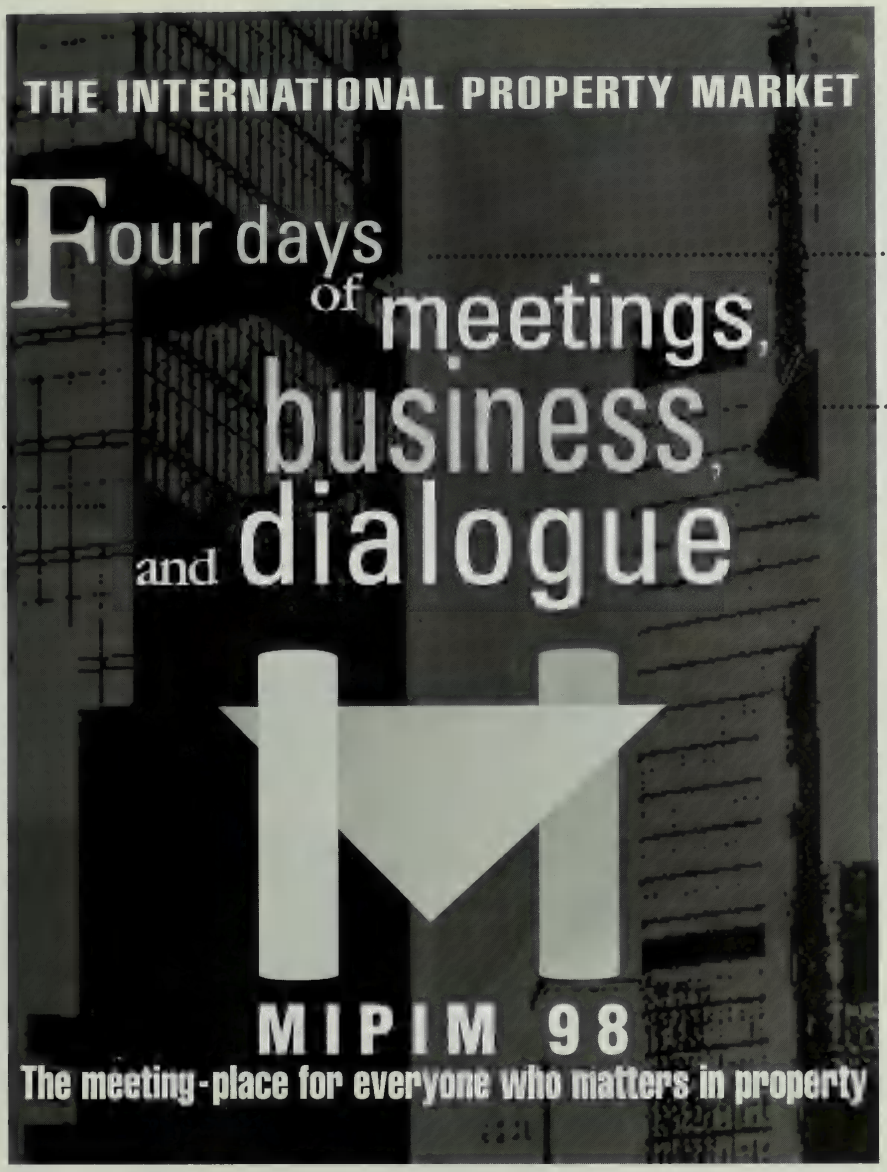
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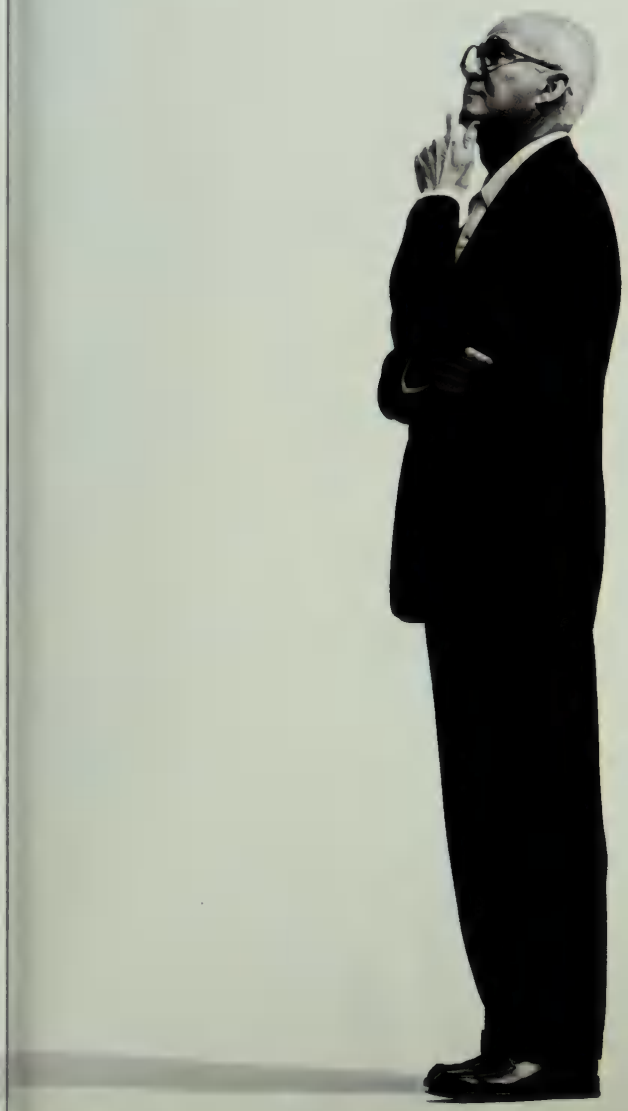
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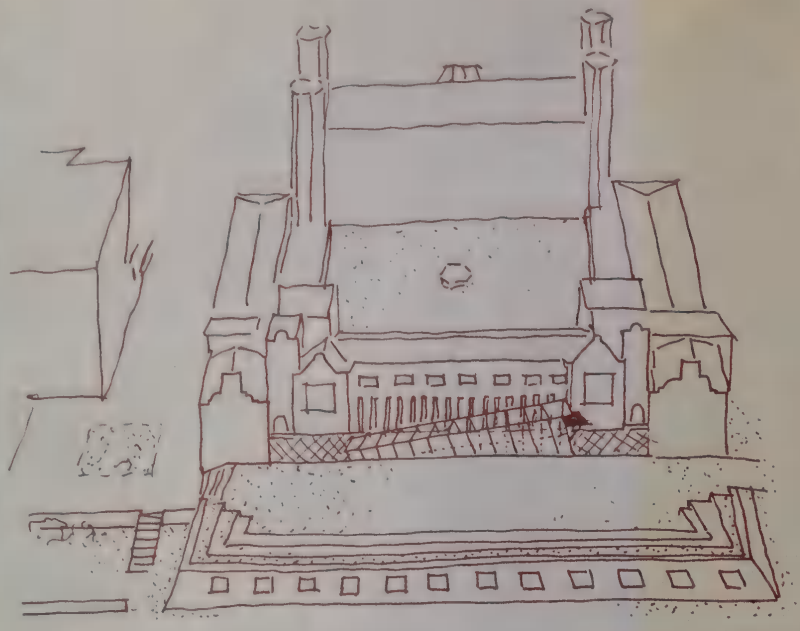
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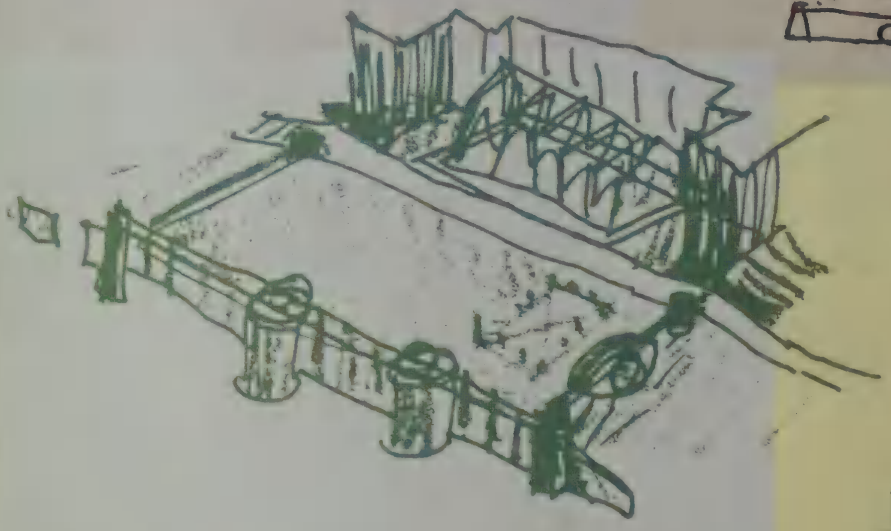
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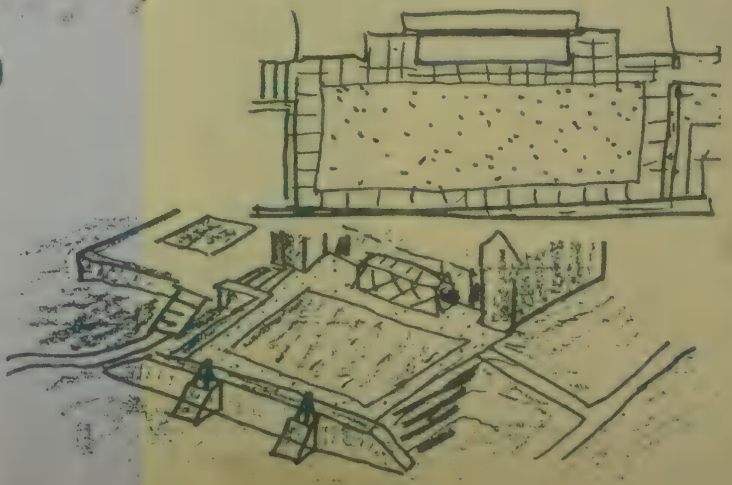
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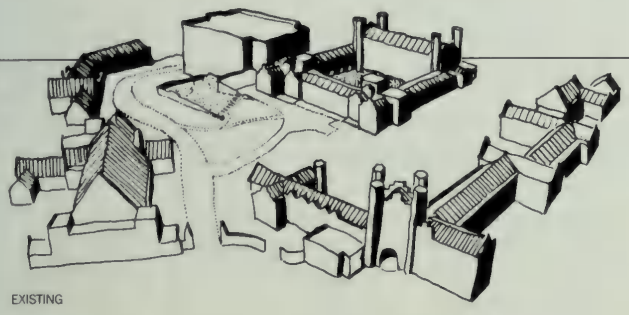




A sketch of Bryn Mawr College's historic heart shows the access roads and parking turnaround that occupy the future site of the Rhys Carpenter Library (opposite). Options for a podium scheme (above and right) locate most of the building underground.

© 1997 ArtPost Rio Rouge a painterly rendering of Elise Boulton Restaurant

PROJECT DIARY Henry Myerberg's first building as a solo architect, the RHYS CARPENTER LIBRARY, provides Bryn Mawr College with a popular new campus center.



EXISTING

by Karen D. Stein

Many young architects face the question of whether to leave an established firm and start their own practice, and Henry Myerberg was no exception. Like some of his talented and fortunate colleagues in the early 1980s, he was thriving at a successful practice, the New York City office of Edward Larrabee Barnes. After five years with the firm, he had become a trusted member of Barnes's inner circle, heading up a variety of academic and residential projects. While he enjoyed the constant challenges of a high-profile, high-powered office in the midst of a building boom, he worried about getting ensconced. Aware that in the decades of running an office, Barnes, in Myerberg's words, "had matriculated many successful independent architects" (Charles Gwathmey, Jaquelin Robertson, and Toshiko Mori, among others), he was on the lookout for the moment to make his own move.

FEBRUARY 1986 Two weeks before the birth of his first child and four months before his 31st birthday, Henry Myerberg, AIA, leaves Barnes's office to start his own firm. He already considers the move behind schedule, if only slightly. "I vowed to myself that by the time I turned 30 I would have my own company," Myerberg says.

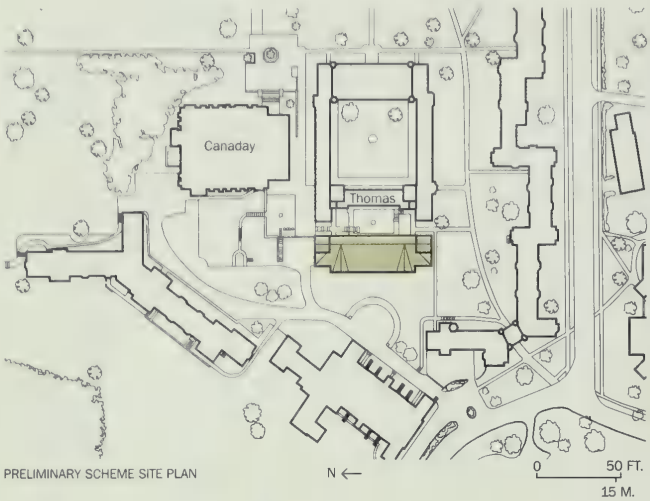
His first solo project is a commission to design the showroom of a knitwear company located in Manhattan's garment district. And Barnes, sympathetic to the travails of a young architect, commits an act of unusual professional largesse: he hires Myerberg as an outside consultant to complete his final project for the Barnes office, the computer center at Bryn Mawr College, six months from completion. An underground facility arrayed around a central light court, the project is vintage Barnes. "He's the guru of commodious underground structures in historic collegiate settings," says his protégé Myerberg. While Barnes remains an advisor to the campus on its expansion projects, Myerberg has worked closely with campus officials and contractors on the computer center as project architect and Barnes decides to retain him as a consultant to supervise its completion.

SUMMER 1988 In July 1988 Myerberg receives a call from Barnes about Bryn Mawr's interest in expanding the stack space of Thomas Hall, a historic Collegiate Gothic structure designed by Cope and Stewardson in 1904. The college's plan is to provide additional space adjacent to the existing stacks of the Art and Archaeology Library, and to place it underground. Barnes tells Myerberg he has recommended him for the job, which is technically complex but too small-scale for Barnes's practice. What's more, Myerberg has become part of the Bryn Mawr extended family, a position enhanced by the fact that his wife is an alumna of the college.

Myerberg meets with James Tanis, the director of libraries for Bryn Mawr College, to discuss the project. Tanis is responsible for the building program, which envisions 10,000 square feet of stack and study-carrel space contained in a one-level expansion behind Thomas Hall. The area designated for the project, a west-facing swath, is currently occupied by a terrace and a surrounding lawn that terminates in a service road and parking turnaround.

Of the state of affairs inside the library, Myerberg observes, "The stacks were built in the 1920s and they're overcrowded. The mechanical systems are inadequate, the temperature controls are ineffective. There are a lot of valuable folios, and the secure area is too small. Books are piled in seminar rooms, which is sort of charming, but all these little dens don't present the library as a singular place." Tanis, in agreement with the architect's prognosis, says campus officials first contemplated a quick, straightforward remedy. Explains Tanis: "We were so clearly in trouble

Project: *Rhys Carpenter Library, Bryn Mawr College, Bryn Mawr, Pennsylvania*
Architect: *Henry Myerberg Architects—Henry Myerberg, AIA, principal-in-charge; Stover Jenkins, Amelie Rennolds, John Janco, Meryem Tangoren, Susan Scatoni, Sharon Portnoy, project team*
Engineers: *Thornton Tomasetti (structural); Makh Associates (mechanical, electrical, plumbing)*
Consultants: *Rodney Robinson (landscape); RL Design (lighting); Shen Milsom & Wilke (acoustical); Langan Engineering (geotechnical); Christopher Ostafin (interior finishes); Ani Rosskam (paint colors); Wolf & Company (cost)*
General Contractor: *Wohlsen Construction*





Myerberg and the college considered a contextual rubble-stone structure located behind the quadrangle of Thomas Hall (site plan and drawings this page).

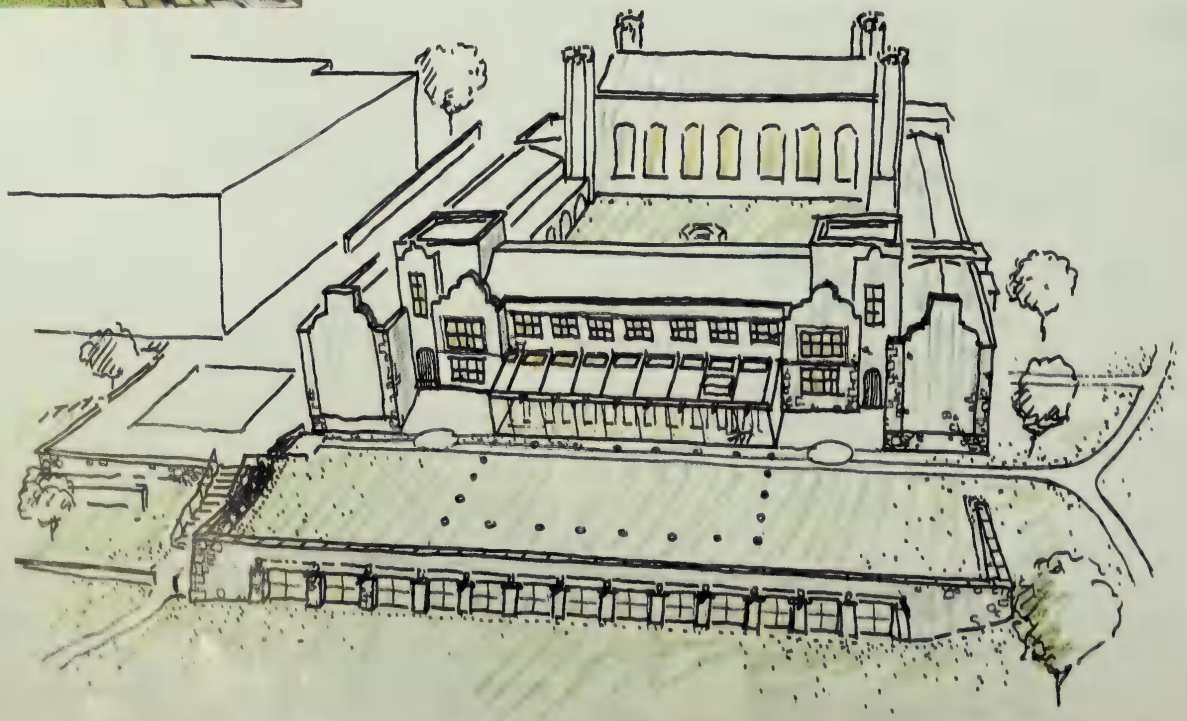
that at first we were talking about, quite simply, a hole in the ground for books."

Myerberg spends the remaining portion of the summer and the early fall preparing his initial design scheme and assembling information to calculate potential costs. His proposal calls for an underground structure shaped like an L in plan with a grass roof and an open courtyard between the old and new buildings to bring daylight to the underground spaces. In trying to accommodate all of the needs enumerated by Tanis and Mary Patterson McPherson, president of Bryn Mawr, Myerberg discovers that 10,000 square feet of new space is inadequate. An additional cellar level of stack space is considered by the group. Anticipated cost hovers around $2 million.

FALL 1988-FALL 1989

By November of 1988, the scheme under consideration has doubled to 20,000 square feet and two levels. The need to relocate existing utilities, which occupy the proposed site, adds to the budget. Aware that with the increased size and scope of the project they now have a full-fledged building on their hands, college officials begin to focus on the nature of the architectural expression. The college asks Myerberg to investigate the possibility of pitched roofs, which school officials consider harmonious with the surroundings: Bryn Mawr was the first Collegiate Gothic campus in America, and every building in its center is on the historic register. Also, the flat roofs on campus have a tendency to leak. As Myerberg struggles for an appropriately up-to-date interpretation of Collegiate Gothic, the size of the project increases once again, this time to 25,500 square feet.

Myerberg designs an above-ground scheme of two floors with rubble-stone walls and gabled slate roofs meant to echo the surrounding campus. The proposal includes renovating a portion of the existing library and retaining the courtyard between the new and old buildings. The cost estimate for the entire project rises to $5.7 million.





SPRING1991 Myerberg's office completes final construction documents for the above-ground scheme, but the college decides to put the project on hold while it completes another campus structure currently under way, a large science building.

After almost a year and a half of waiting, Bryn Mawr asks Myerberg for an updated estimate of construction costs. The new total—$6.5 million—includes additional mechanical equipment to service other campus buildings. With the price rising for every new addition to its wish list, campus officials decide to take yet another step back and examine what other institutional needs might be fulfilled by this project. A large lecture room and accommodations for the college's vast slide library—together about 6,000 square feet—are added to the program. The project is now more than 30,000 square feet and the college wonders if another site might be less intrusive and more economical.

WINTER1992-93 Two concepts for adding on to Thomas Hall's neighbor, Canaday Library, are explored. Bryn Mawr officials bring Barnes back to help the group evaluate the various strategies. The discussion of Canaday and the involvement of Barnes, McPherson explains, in no way reflect a lack of confidence in their young architect. "It's Henry's project," she says, but "Ed has stayed involved as a kind of welcomed kibitzer." Even though the increased complexity of the project might seem to necessitate a more established firm, Bryn Mawr officials are committed to Myerberg. "At some point we did ask ourselves if we should be looking at other architects," concedes Tanis. "But we've liked what Henry has done. He keeps coming up with viable ideas."

With Barnes, the group discusses the merits of proposals that Myerberg develops for the Canaday site—one a broad podium with underground spaces and the other a five-story tower. Both were estimated to be less expensive than building next to Thomas. As members of the art and archaeology faculty get involved in the planning, they begin to express concern about the distance between their offices in Thomas Hall and the proposed addition to Canaday. The college reconsiders the Thomas Hall site.

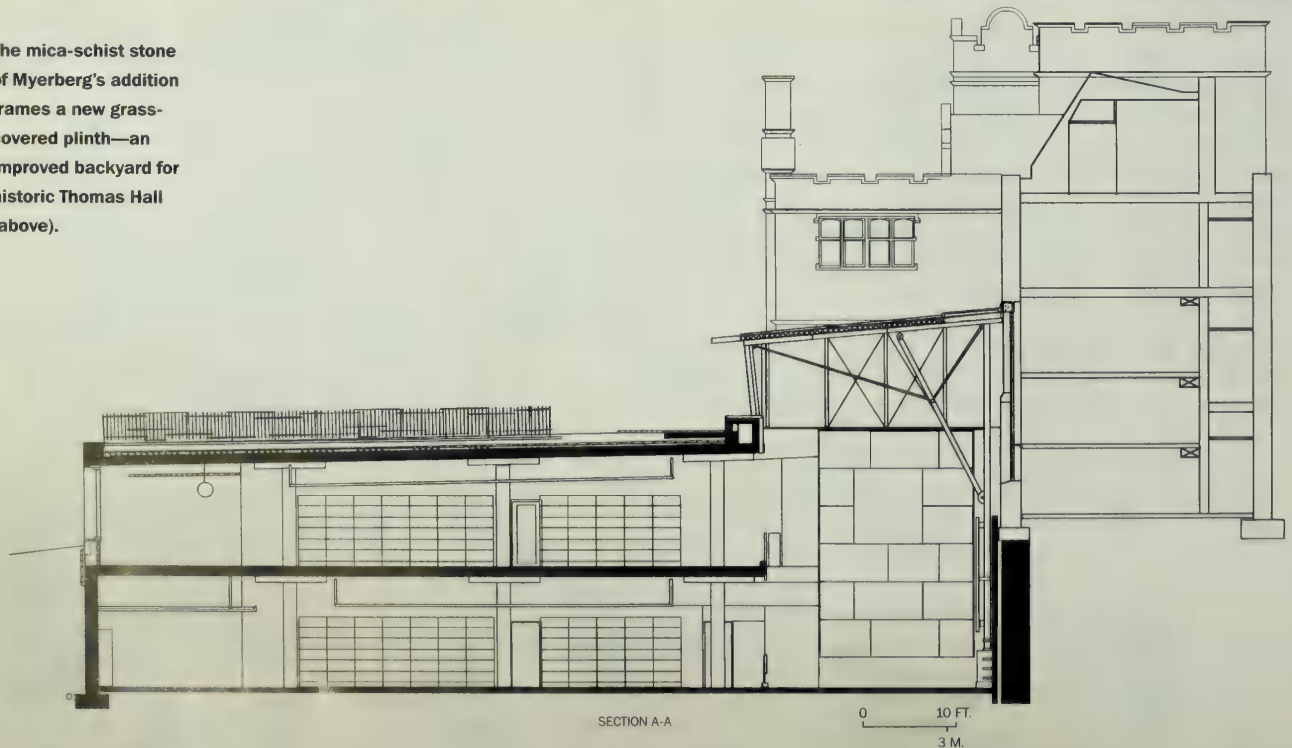
Back on the Thomas Hall site, Myerberg prepares two alternate concepts. The first is a four-story building that screens most of the existing back side of Thomas. The second scheme, a much larger underground expansion than originally proposed, butts right up against the foundations of Thomas Hall but still incorporates a skylit atrium in between.

WINTER1993 While the first scheme draws on the traditional language of the campus, the second scheme is more modern in its vocabulary of forms. For Myerberg the constant process of redesigning the project over the years has helped him develop his own architectural language for a historic site. "My designs went from Collegiate Gothic contextualism to Modernism—one that is referential but still abstract," he observes of the progression of schemes. "I got more comfortable with Modernism." Did this proposal's composition of taut, flat planes make it alien to the campus? Not entirely, for as architecture aficionados know, in addition to its beloved historic heart, Bryn Mawr has another distinct legacy: Louis Kahn's Erdman Hall Dormitories of 1965. McPherson

After the contextual above-ground scheme was abandoned, Myerberg developed several proposals for a mostly underground building (drawings this page).



The mica-schist stone of Myerberg's addition frames a new grass-covered plinth—an improved backyard for historic Thomas Hall (above).



allows that a modern structure like Erdman can be more successful than a traditional design in knitting together historic campuses, as long as it's not too intrusive. "Often it's the very modern building that goes best," says McPherson. "If you try to match the existing too closely, it may come out as a pale imitation."

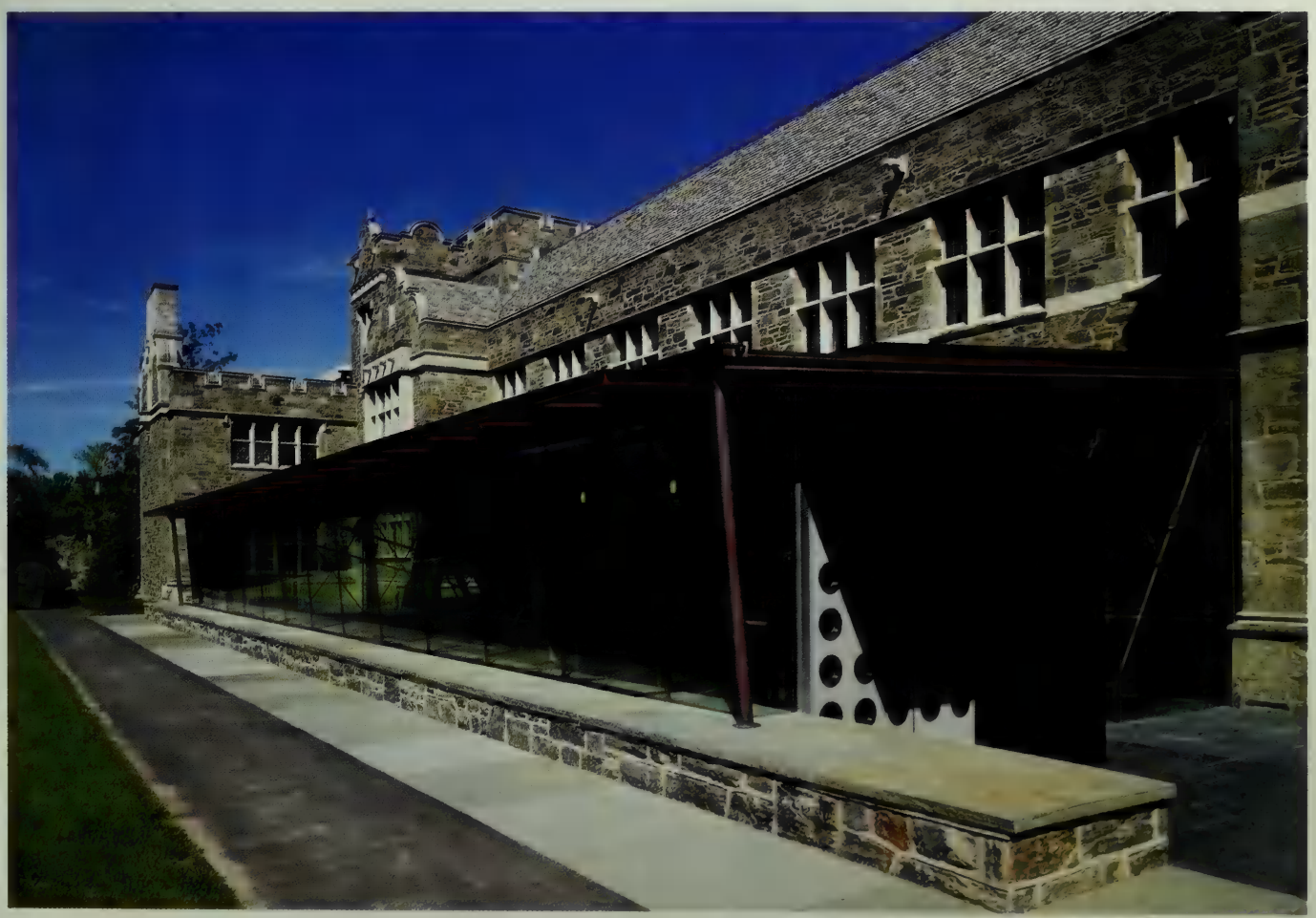
With Barnes's advice and consent, the group agrees to pursue the modern, underground scheme, which maintains the faculty offices' proximity to the proposed library and saves the Canaday site for future expansion. By the end of 1993, the project holds firm at 32,000 square feet. The cost is estimated at $6.2 million. McPherson, who has overseen many campus renovations and additions since becoming the college's president in 1978, calls this project "the most complicated yet." There are internal issues. "It's more than just one academic department and the library system," explains McPherson. And there are the difficulties of the site itself. "When you drop a hole next to an existing building, the existing building can drop into the hole," says McPherson.

APRIL 1995 More than seven years after receiving a tip from a former employer about a small addition job, Myerberg supervises the beginning of construction on what is to be a state-of-the-art scholarly facility. Three months into the process, there is a pause in construction as the soil conditions beneath Thomas are discovered to be less stable than anticipated. Instead of a concrete underpinning to shore up the historic structure and provide foundations for the new building, metal rods are drilled at an angle beneath Thomas Hall. These lateral tie-backs are covered with metal mesh and sprayed with gunite. An independent concrete structure, separated by a waterproofing layer, contains the centerpiece of Myerberg's design, a four-story atrium reading room.

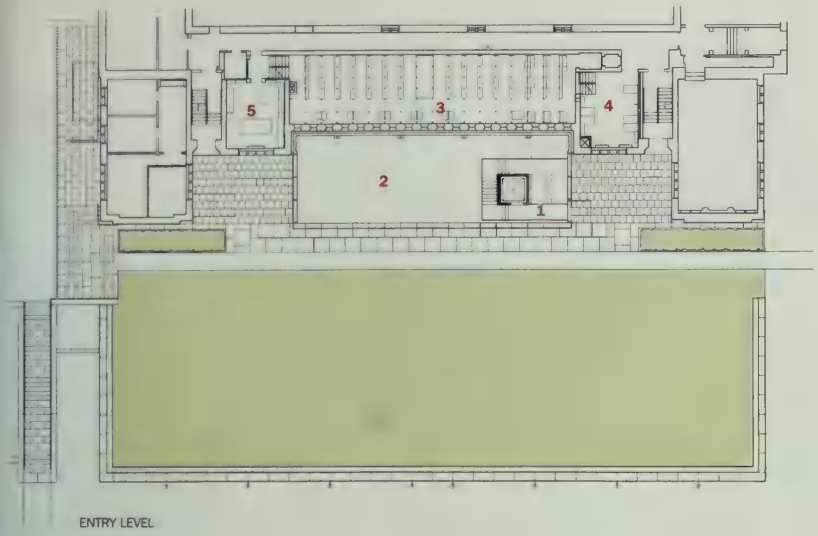


Myerberg says his glass-and-steel building with a slate roof (above and below) is "futuristic gothic."

The atrium's design, based on Myerberg's desire for a signature space that will serve as a communal focus for the various departments, was inspired by a visit to Sir John Soane's former home in London, now a museum. "When I was in the Soane house, I started to think of the project as an archaeological site and the space in between old and new as a dig. This idea suggested the structure. If it is in fact a dig, then there's a protective shed, which led me to the wood decking of the *(text continues)*

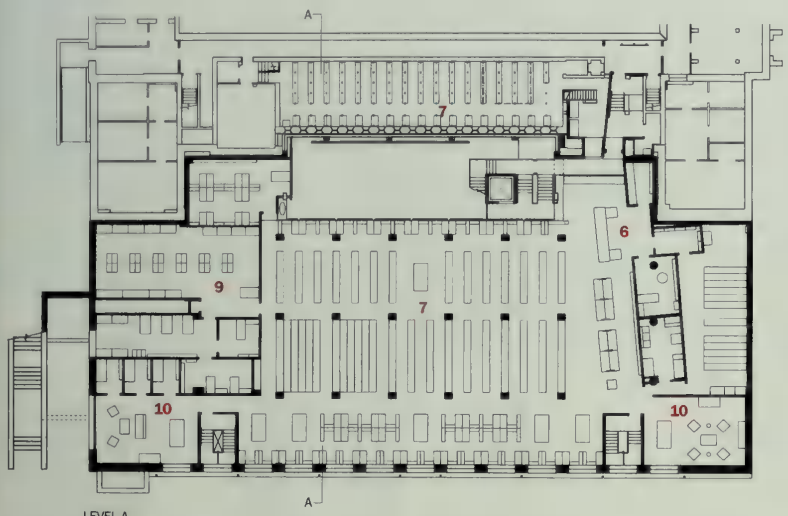



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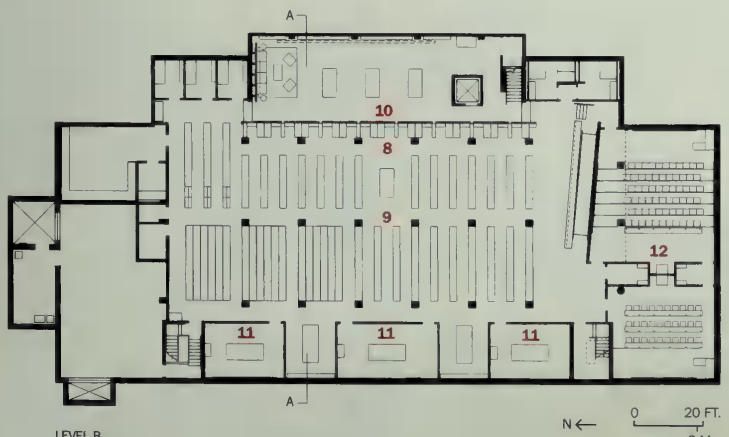


ENTRY LEVEL

1. *Entry*
2. *Atrium*
3. *Collections*
4. *Study room*
5. *Prints/drawings*
6. *Circulation*
7. *Stacks*
8. *Study carrels*
9. *Visual resources*
10. *Reading room*
11. *Seminar room*
12. *Lecture room*

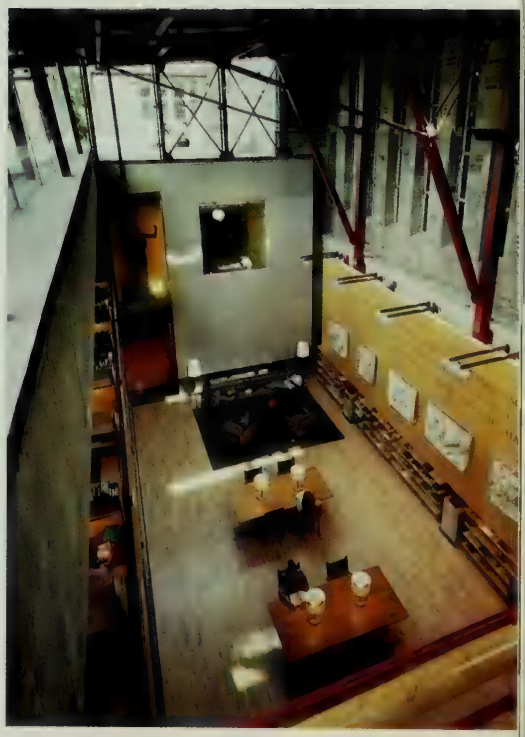


LEVEL A



LEVEL B

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The four-story high atrium reading room (above and opposite) is surrounded by study carrels, seminar rooms, and lecture halls (plans left). A frieze of plaster casts from ancient Halicarnassus and the names of important art and archaeology faculty adorn the billboardlike new wall in front of the stone exterior of Thomas Hall.

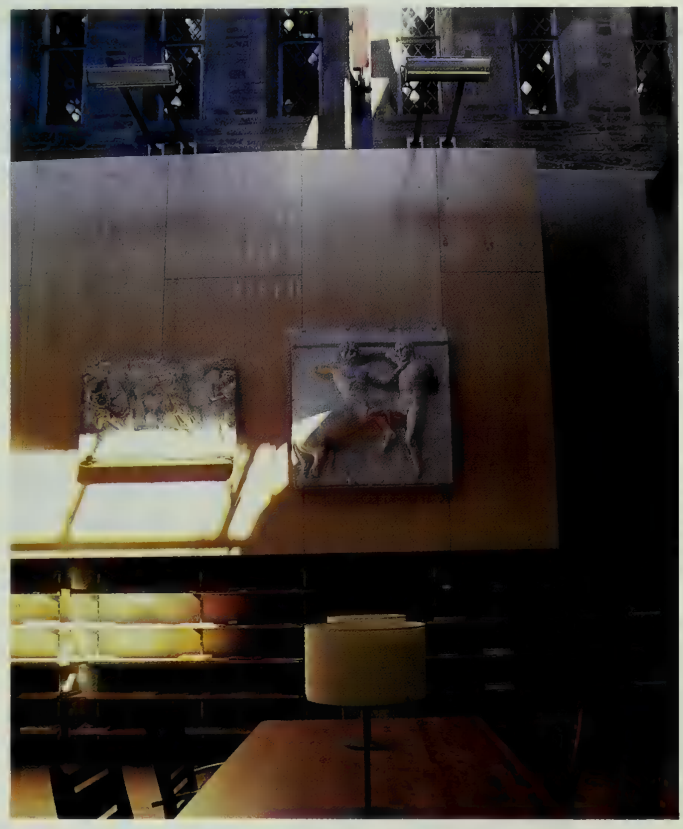

TROY

The outside back wall of Thomas Hall has been incorporated into Myerberg's multilevel atrium reading room.

The reading room features works from the college's art collection, such as a statue of Athena (opposite).

The architect's office designed study carrels (below left). Reading table chairs by Peter Danko use seat belt fabric (below right). Tectum is suspended from the ceiling to increase acoustical privacy (bottom).







roof set atop the structural steel members. Then there's scaffolding, so the staircase wraps around the space like scaffolding. And there's a hoist, which in this case becomes the elevator enclosed in a steel cage." The steel is finished only in a red primer coat.

As the design of the atrium develops, Myerberg further imbues the space with Bryn Mawr's liberal arts mission. He surveys the college's collection of art to incorporate pieces of it into his design. Dominating the atrium, a billboardlike surface of baltic plywood is adorned with a frieze of plaster casts rescued from basement storage and repaired. A statue of Athena, once displayed in Thomas Hall, is given a central spot.

SUMMER1997 The project is 33,000 square feet of new construction and 10,000 square feet of renovation within Thomas Hall. Study space is spread among the the stacks, which, for now, hold 125,000 volumes. "There's space for the collection to grow," says Tanis.

Construction ends in August 1997. When students arrive at Bryn Mawr in September for the new school year, the library is ready for use. Within a month of opening, hours for the Rhys Carpenter Library are extended to accommodate heavy use by students, including those from other departments. "It's jammed," reports McPherson. "Henry did it right," observes Barnes, now retired. "Blockbuster buildings ruin the scale of a historic campus. His architecture is delicate glass and steel, and the rest—the bulk of the building—is part of the landscape." ■

Sources

Structural wood decking: *Hoover Treated Wood Products*
Mica-schist rubble stone: *Media Quarries*
Frameless-glass curtain wall: *Pilkington*
Membrane roofing: *Bakor*
Slate roofing: *Vermont Structural Slate*
Fixed aluminum awning: *Kawneer*
Skylights: *Fisher Skylights*
Insulated panel glazing: *LOF*
Aluminum entrance door: *Special-Lite*
Maple doors: *Eggers*
Hardware: *Schlage, Hager, LCN, Von Duprin*
Acoustical panels: *USG, Tectum, Inc.*
Paints, stains: *ICI, Glidden*
Plastic laminate desktops: *Nevamar*
Flooring: *Armstrong, RCA*
Carpeting: *Masland Contract Agenda*
Custom circulation desk, tables: *Ed Kleinman*
Reading table chairs: *Peter Danko*
Downlights: *Edison Price*
Display lighting: *Elliptipar*
Hydraulic elevator: *Dover*



The crematorium's porte cochere is embraced by a low brick wall that links it to the octagonal funeral hall

ESSAY At 69 years old, Fumihiko Maki is still going strong. The recently completed KAZE-NO-OKA CREMATORIUM distills the themes of his rich career.

by Naomi R. Pollock, AIA

In 1956 Fumihiko Maki, a recent graduate of both Cranbrook Academy of Art and Harvard University's Graduate School of Design, began teaching at Washington University's architecture school in St. Louis. A long way from his home in Tokyo, Maki had been among the first young people from Japan to study in the United States after World War II. Like any newly minted architect, he was eager to ply his trade, and, as it turned out, he did not have to look far for an opportunity to build.

After joining the university's newly established campus planning office as a designer in 1957, Maki devised a scheme for a new campus building that would house a library, a gallery, and departmental offices under one roof. A potential donor, engaged by the architect's ideas, agreed to fund construction, provided the design was built as Maki planned. Having already accepted a traveling fellowship from the Graham Foundation, Maki had to leave his schematic design in the hands of a local architect, who saw the project through to completion. A blend of East and West, the finished Steinberg Hall impressed the editors of *Architectural Forum* so much that they hailed Maki as one of the "new generation of men and women who will shape American architecture and American building in the 1960s." Little did they know the contribution Maki would make.

Though Maki did not build in the United States again until the Center for the Arts Yerba Buena Gardens in San Francisco [RECORD, March 1994, pages 72–79], which was completed in 1993, he went on to become one of the leading practitioners of architecture in Japan and a highly respected designer, theoretician, and teacher around the world.

"He's unique," observes Hiroyuki Suzuki, professor of the history of architecture at the University of Tokyo. "He's one of the most American-oriented, and in that sense most Westernized, architects in Japan. But at the same time he shows us something Japanese in his work." A recipient of many of the profession's most prestigious prizes, Maki has designed everything from convention centers to kindergartens. He has not only built throughout the Japanese archipelago but also in Brazil, Germany, and Malaysia. Through his roles as professor, author, and jury member of architect-selection committees, Maki has extended his sphere of influence far beyond his portfolio. And at 69 years old, he shows no sign of slowing down.

With the second phase of the already vast Makuhari Messe convention center and the Fukuoka University Student Center recently finished and a conference center in Niigata Prefecture and a library in Fukui Prefecture on the boards, Maki's office is bustling with activity. This is no small feat even for Japan's most established firms, given the country's current economic distress and consequent belt-tightening. Since work in Tokyo has recently slowed considerably for all architects, Maki, like many of his colleagues, now has more projects in regional cities than ever before. And although he has a number of repeat clients, he too is participating in competitions for public work commissions. But none of these limitations have had much impact on the quality of the firm's work. In fact, the completion of the Tokyo Church of Christ in 1995 [RECORD, October 1996, pages 88–93] and the Kaze-no-Oka Crematorium in 1997 marks the realization of two of his most elegant and powerful buildings to date.



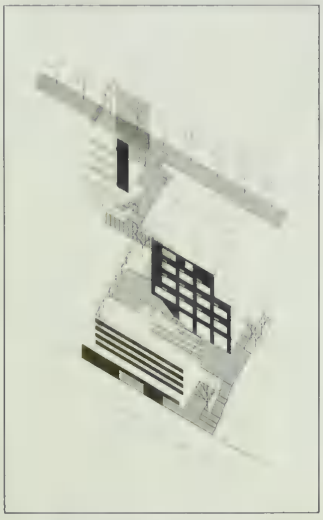


The success of these and other Maki projects stems largely from a commitment to his own exacting standards. "The qualities of great architecture are those that provide rich spatial experiences and the provocation of images," he maintains. While Maki has been fortunate to land evocative commissions, such as the church, that lend themselves to these aims, he also has an ability to turn the practical into the poetic. "Maki always designs from the viewpoint of the user," explains architect Kengo Kuma. "For him, the overall composition is secondary."

Maki's first building, Steinberg Hall (top), is at Washington University, St. Louis. His 1995 Floating Pavilion (above), is in Groningen, Holland.

Naomi R. Pollock, AIA, is RECORD's Tokyo-based correspondent. She is the guest curator of an exhibition at the Art Institute of Chicago entitled "Japan 2000: Architecture for the Japanese Public," which opens this month.

Nearly complete, Hillside West continues Maki's famed Hillside Terrace.



Although much of his work employs a Modern, abstract language, he does not shy away from expressive forms.

Maki's Floating Pavilion is a case in point. Half boat and half building—a barge of sorts—the 20-by-82-foot structure was designed for the city of Groningen in Holland as a multipurpose performance space. Neither site-specific nor program-specific, it travels up and down the canals that crisscross the city, acting as the setting for a one-act play here and a chamber music concert there. In its quiet way, the pavilion, enveloped by a steel-framed tent, alters the surrounding landscape everywhere it goes. Likened to clouds, giant snails, and alien creatures, it is indeed hard to miss. "When ordinary people started to use nicknames, we knew the object had captured their imagination," says Maki, who is very interested in the universal reaction to architectural forms.

While the architect is engaged in other European projects, he chooses his international work carefully. Maki rarely undertakes more than one or two projects outside Japan at the same time. Also, he is wary of huge overseas projects that might drain the resources of his 30-person office. Because it can be difficult to re-create his building process in other countries, Maki is concerned about quality control.

But once he has accepted a commission, Maki devotes himself fully from concept through construction, regardless of scale, program, or location. "I do not like to give quick comments on a project and leave the rest to others," he says. Creating a school-like environment in his office, he invites and encourages his staff to contribute ideas and engage in free-spirited discussion. Though he maintains the ultimate decision-making power, the open, nonhierarchical atmosphere in his atelier stimulates a steady stream of fresh ideas and new approaches.

Maki's focused thought and attention do not stop when projects go into construction. Instead, he plays an active role in the transposition of drawings and models to built form. As in the United States, comprehensive drawings and specifications are prepared ahead of time, but often they are elaborated on in the field. During frequent visits to his site offices, he meets with contractors and manufacturers to discuss the building techniques. The comparatively collaborative spirit between architect and builder even allows for design revisions during construction, provided that costs balance out in the end. Observes Maki, "In Japan we have more freedom to design further in the field office." One particular benefit of this way of working is that it allows the designer to tailor details to each project and experiment with materials—for Maki, an essential way of giving character to space. His precise command of materials is notable, even in a country whose architects are well known for their attention to detail.

While he maintains a careful eye for the small-scale, Maki also thinks large and plans on an urban scale. Nowhere is this more evident than at Hillside Terrace. Lauded by Suzuki, among others, as one of Maki's greatest achievements, the development consists of six mixed-use parcels on either side of Old Yamate Street, a heavily trafficked four-lane artery in the heart of Tokyo. "Here he succeeded in creating a natural street scene," explains Suzuki. Built in stages from 1969 to 1992, Hillside Terrace chronicles changes in Maki's architecture from the heavy concrete construction of the first phase to the airy transparency of the sixth. Yet all parts welcome pedestrians with open plazas and other human-scaled elements. Now Maki is working on a sequel, Hillside West, which is near the rest of the complex. The new construction will consist of three small buildings linked not by a plaza but by a small alley modeled after a traditional Japanese *roji* or exterior corridor, which will connect parallel streets. A mixture of commercial and residential, Hillside West has measured up to to the master's expectations; in fact, it will become the site of his own office when the complex is completed this fall.





The Kaze-no-Oka Crematorium sits at the edge of an oval park (left). From the park, the tilted funeral hall, angled Cor-ten steel wall, and concrete crematorium appear to be sculpture (right). Maki's sketch of the project (below).



Trees screen the park from surrounding homes. The forecourt seen from the entry porch (below).

In the past, crematoriums were made to be foreboding or inconspicuous. Open to the public in every sense, Maki's Kaze-no-Oka Crematorium sets a new precedent. Located in Nakatsu, a city of 65,000 people on Japan's southern island of Kyushu, the 27,080-square-foot building derives its potency not just from its careful siting and attention to detail, but also from the architect's handling of the subject of death.

Although cremation is not strictly required by law, it is the prevalent practice in Japan because of religious beliefs as well as the shortage of open land for burying bodies. While funeral services can be conducted at any number of places, including temples, private homes, and function halls, cremations are usually held in facilities run by the local government. With their looming chimneys emitting strange odors, crematoriums in the past were rarely welcome neighbors. So when Nakatsu's 30-year-old facility became antiquated and inadequate, Mayor Ichiro Suzuki invited Maki, who completed the city's Obata Memorial Library in 1993, to design an updated version and incorporate it into a new park that could mediate between the building and its surroundings. "This was precisely the kind of environment we wanted to substantiate," says Maki, who was eager to improve on the existing crematorium's inhospitable setting. Inspired by Erik Gunnar Asplund's Woodland Chapel and Crematorium in Stockholm of 1920, Maki felt the setting should allow for contact with nature. Explains the architect, "In Japan we believe that we return to nature after death."



But if this park was to be used by people without any direct connection to the crematorium, Maki knew that the building could not evoke bereavement. Instead, he decided, it should become more like a sculpture or have an abstract form. Indeed, the crematorium's three main

Project: *Kaze-no-Oka Crematorium Nakatsu, Oita Prefecture, Japan*
Architect: *Maki and Associates—Fumihiko Maki, principal-in-charge; Yukitoshi Wakatsuki, Norio Yokota, project team*
Engineers: *Hanawa Structural Engineers (structural); Sogo Consultants (mechanical)*
Consultant: *Sasaki Environmental Design Office (landscape)*
General Contractor: *Tobishima Corporation (building); Toda Corporation (landscape)*

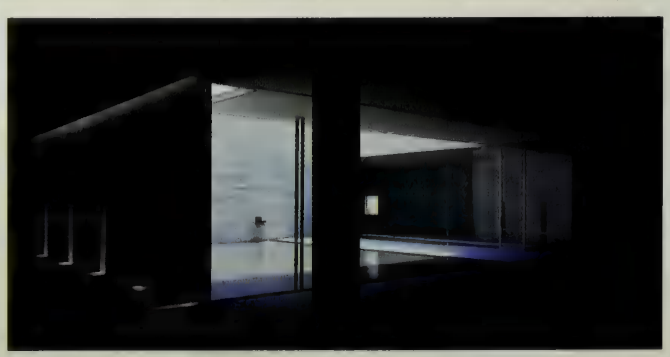


elements—the brick funeral hall, the concrete crematorium, and the waiting area concealed behind a weathering steel wall—read as the park's backdrop. And thanks to technological advances in cremation, instead of one large chimney Maki was able to use six short chimneys, which were easily masked by the building's parapets.

Erected on top of Kaze-no-Oka (hill of winds), the building sits at the edge of an elliptical green that unites it with an existing cemetery and historic tumuli that were discovered during early site investigations. Designed in collaboration with Toru Mitani, professor of landscape architecture at Shiga Prefectural University, the grassy basin is a world unto itself. While berms control views into the crematorium, the manipulation of the ground plane helps to edit out nearby houses. And triggered by gusts from different directions, an underground wind chime of sorts at the oval's center adds an eerie but enchanting touch. "While the idea of being next to a crematorium is a little creepy," says facility director Katsuhiko Oie, "people are starting to use the park more and more. When they see how nice it is, they tend to come back."

Maki's solution grew out of his reaction to existing crematoriums in Japan. "Many facilities built during the bubble [economy] years are very ornate. But at the other extreme are the very poor, old facilities where there is no place to prepare for cremation and final departure," explains the architect. Rejecting these precedents, Maki started by asking what type of place the bereaved require for taking final leave of the dead, and what sort of memories mourners should have of this primal experience.

Cremations in Japan are highly ritualized ceremonies and generally follow a set course that begins with the farewell service, crescendos with the incineration, and closes with the enshrinement of the deceased's bones and ashes. Using this sequence, Maki composed a string of discrete spaces that correlate with each consecutive stage. Unlike many Tokyo facilities, where mourners are surrounded by a constant flurry of activity, this one is well-spaced. Differentiated areas largely shield the bereaved from extraneous events and isolate them from the outside world. Equally

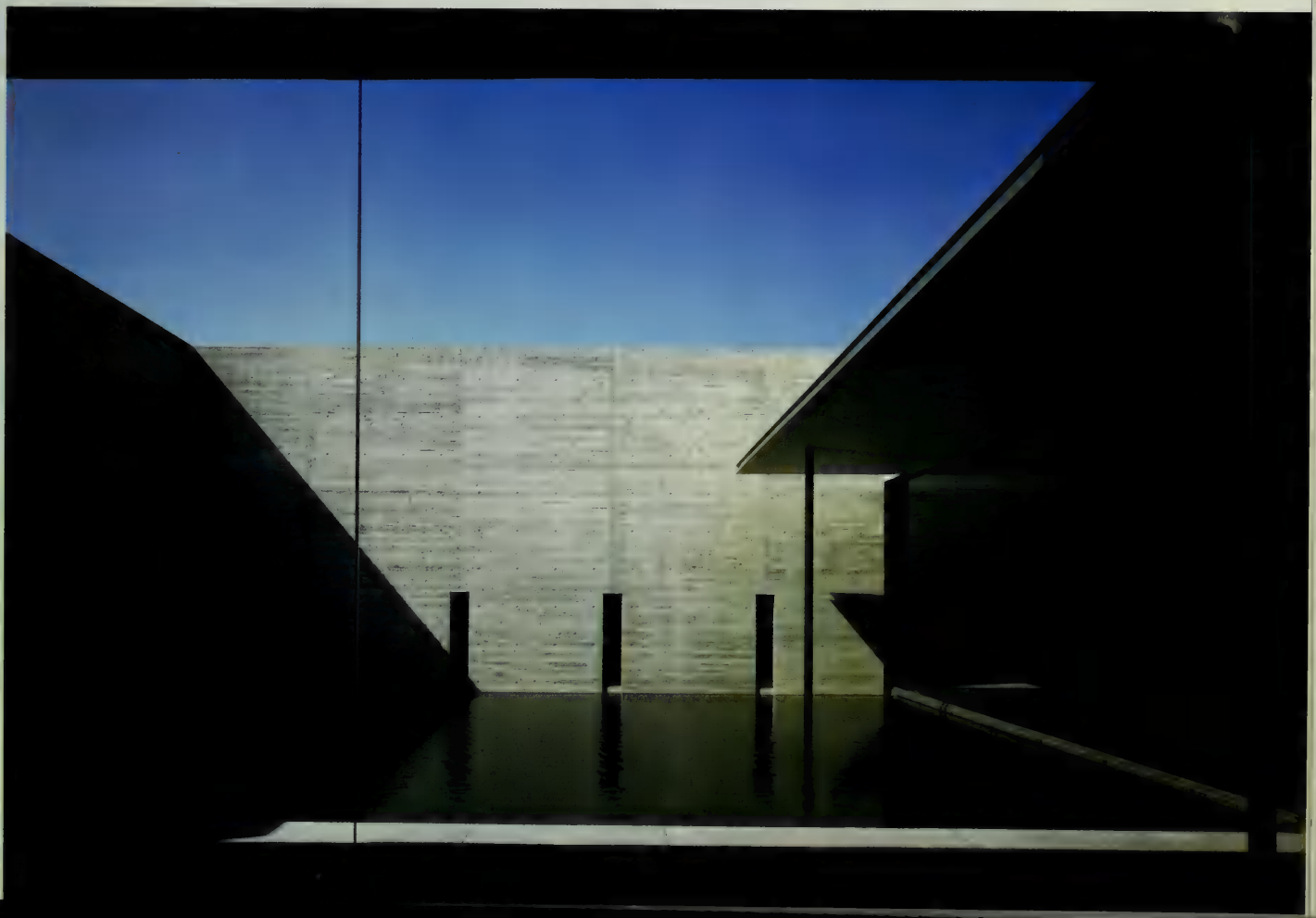


In the cloister gallery, cedar boards were used to form the concrete (opposite). Mourners proceed through a choreographed sequence of spaces (plan right) to the oratory (below), where prayers of farewell are said. The lattice door hints at the crematory hall beyond, where a pool provides reflected illumination (below).



1. *Porte cochere*
2. *Forecourt*
3. *Entry porch*
4. *Oratory*
5. *Crematory*
6. *Enshrinement room*
7. *Courtyard*
8. *Waiting area*
9. *Office*
10. *Funeral hall*
11. *Park*









From the crematory hall, mourners proceed to the airy waiting area (opposite), with a blond oak staircase and floors. The ceremony culminates in the enshrinement room (above), where the deceased's remains are collected. The funeral hall (right), a nondenominational chapel, is shrouded in semidarkness. The simple wooden benches were designed by Maki's office.

important is the connective tissue of the reinforced-concrete and steel-frame building. Covered walkways, corridors, and well-placed walls link rooms and channel circulation but also provide places to pause, reflect, and prepare for the next stage. Circuitous but deliberate, winding but goal-directed, passage through the building recalls the approach to a traditional shrine or temple where the final destination is not revealed at the outset, says Maki.

Among the architect's most effective tools for giving specific character to each room are the multiple ways that daylight is admitted. The semidarkness of the octagonal funeral hall, where light enters through a single low window, a vertical slit, and four punched apertures overhead, contrasts sharply with the waiting rooms where mourners sip sake and pass time while the body is cremated. Here picture windows bathe seating areas with light.

Movement through the building is frequently punctuated by changes in light as visitors move from airy circulation spaces to muted ritual areas and back again. And the use of louvered clerestories, as well as the placement of windows near ceiling or floor level, enabled the designer to limit illumination and views, a design decision essential for maintaining privacy and a contemplative atmosphere. Even the expansive vistas from the waiting rooms are carefully composed to include distant mountains, following the traditional Japanese concept of borrowed scenery. However, the hall before the incinerators, where the ceremonial send-off occurs, is almost unexpectedly filled with daylight and views, albeit highly controlled ones of sky, clouds, and water. Here floor-to-ceiling glass opens onto an interior pool covered by a shimmering six-to-seven-inch layer of water whose gentle movements are reflected on the room's ceiling. Though meditative, this space is far from gloomy. Instead, the calm presence of nature's primary elements is a soothing elixir for the grief-stricken.

Working in tandem with Maki's selective use of daylight is his rich palette of materials, whose various patterns are set off by the sun's diurnal changes. While some materials were necessary to meet functional requirements—such as the aggregate concrete floor over which coffin-bearing trolleys can smoothly glide—others were chosen for their texture or color. A clear expression of this building's link to the natural world is its predominant use of earth tones. "We decided to use colors ranging from gray to black, to express dignity, and brown, to create a feeling of gentleness," explains Maki.

Building surfaces are enhanced by the striations of stone, the pronounced grain of cedar planks, and the sheen of polished concrete. And the juncture of wood and steel, or glass and concrete, inspired numerous details. As is common practice in Japan, Maki worked closely with his on-site staff to design many details during construction. This was essential for the proper assembly of elements such as the sashless windows, whose simplicity belies the effort that went into their making, as well as highly articulated pieces like the doors of the oratory. Made of dark wood lattice, the doors operate like traditional sliding partitions but are suspended by industrial-grade stainless-steel hardware left exposed for all to admire.

And admire they do. While the crematorium is in use almost daily, the building is a frequent destination for architects and others interested in Maki's work. ■

PHOTOGRAPHS: © TOSHIHARU KITAJIMA/ARCHI PHOTO



PORTFOLIO Eight uncommon projects illustrate how small size or limited scope can foster creative design solutions.

TAMS's Ventilation Building No. 7, which functions as a huge fan room for a tunnel in Boston, is a clear expression of "the building as machine," yet its detailing provides an almost decorative quality.



Most architects will never get to do a high-profile project with a huge budget. There are just so many Gehrys and Guggenheims, Meiers and Gettys. But emulating the considerable achievements of these men is not necessarily the goal of many professionals. Instead, the most satisfying moments in their careers may come when they have the opportunity to discover a new approach to something that has been overlooked by everyone else. The buildings on the following pages fit into this category.

Originally, the in-house moniker for the buildings featured here was "small projects"; but some of the projects we chose, such as Boston's Ventilation Building No. 7 (this page), are far from small. What distinguishes these buildings, we found, was that although the architectural demands on them may be quite limited compared to, say, those of a commercial office building, they are treated in an uncommon way. In the case of the vent building, the architects seized as their palette what some might have left as blank walls, using them to express what the building is: the skin of a great machine.

Sometimes architects make opportunities for creative expression by finding ingenious new uses for things—such as employing a prefabricated salt dome usually found on a roadside for a school's library. While the dome, which is at the center of the building, houses books and work spaces for students, it also makes a tongue-in-cheek reference to Thomas Jefferson's library at the University of Virginia. Architects might also handle small details in a more Proustian manner, either to invoke a grown-up's memories of a picnic shelter at a summer camp long ago or to impress brand-new memories on the children who will eat peanut butter sandwiches there next summer.

These works may not be small, but they are uncommon. And they demonstrate one of the greatest pleasures of being an architect: exploring the unlimited number of ways we can find to create beauty out of what might seem to be nothing at all.—Charles Linn, AIA



MACHINE FOR AIR-HANDLING CELEBRATES ITS MECHANICAL NATURE

Ventilation Building No. 7 functions as a huge fan room, pumping fresh air into the new Ted Williams Tunnel, which links the city of Boston to Logan Airport, and sucking fume-filled air out. It is also an important icon for Boston's newly improved highway system, known as the "big dig" because much of it is underground.

Three firms collaborated on the building: TAMS Architects, Engineers & Planners; Wallace, Floyd, Associates Inc.; and Stull & Lee Inc. A project team from Wallace, Floyd and Stull & Lee provided conceptual design and a description of criteria. TAMS was given a set plan, determined by function.

The architects decided that the best way to celebrate the highway system was not to mask the mechanical nature of the vent building but to express it with as much clarity as possible.

The building is divided into two sections. The intake section is made up of horizontal gray aluminum louvers and vertical concrete risers. The exhaust section consists of aluminum panels surmounted by 14 towers of concrete and stainless steel. Gray aluminum channels divide the facade into rectangles, behind which are the huge fan rooms. The facade's deep, overscale divisions indicate the size of the elements behind it: "squirrel-cage" fans that are big enough for polar bears.

Although the location of every one of the 14 vent stacks was preassigned, the slope of the stacks and other details—such as the black bolt heads that punctuate the stainless-steel caps of the exhaust vents—were left to Deborah Fennick, AIA, and Chris Iwerks, AIA, of TAMS.

The aluminum sheathing that covers the intake section of the building is a "rain screen" pressure-equalization system. Wind blowing against a conventional wall system tends to create a pressure differential—positive on the exterior, negative on the interior—and moisture tends to be drawn into cracks or openings toward the negative pressure. A rain screen is an open-jointed cladding system with a cavity behind it and a weatherproof wall behind that. The open joints prevent pressure differential, so that wind-driven water is not drawn into the building. With no sealants to deteriorate, the system has an estimated life of 75 years.

The vent building's exposed structural steel and cross-bracing are painted a cream color that contrasts with the warm dark gray of the skin, and the steel system is separated by more than a foot from the panel faces. TAMS's precise

expression of material and function was deliberately Miesian, according to the architects; but details such as doubled vertical aluminum channels and horizontal channels mitered to go around corners belong more to the decorative 1990s than to the purist 1940s. The exposed concrete of the five supply shafts and 14 rooftop exhaust vents is meant to recall the concrete highway that runs directly beneath the building.

Ventilation Building No. 7 cost approximately $15 million, on a par with buildings of similar scope. *Jonathan Hale*

Jonathan Hale is a Boston architect, critic, and the author of The Old Way of Seeing.

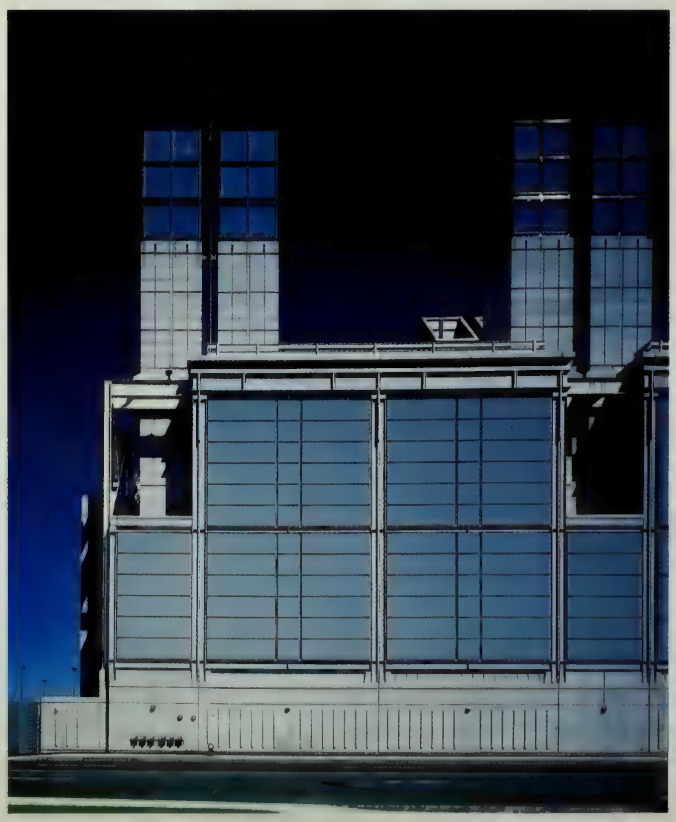
Project: *Ventilation Building No. 7, Ted Williams Tunnel, Boston*
Owner: *Massachusetts Turnpike Authority*
Architects: *TAMS Architects, Engineers & Planners—Deborah Fennick, AIA, and Chris Iwerks, AIA (design development and final design)*
Wallace, Floyd, Associates Inc. and Stull & Lee Inc.—Doug McCallum, AIA, lead designer; Herbert Murray, AIA, chief architect (systemwide design)
Engineers: *TAMS (structural); URS (civil); Gannet Fleming (project management); SAR Engineering (mechanical/electrical)*
Consultants: *Carol Johnson Associates—Pat Loheed (landscape)*
General Contactor: *De Matteo Construction*





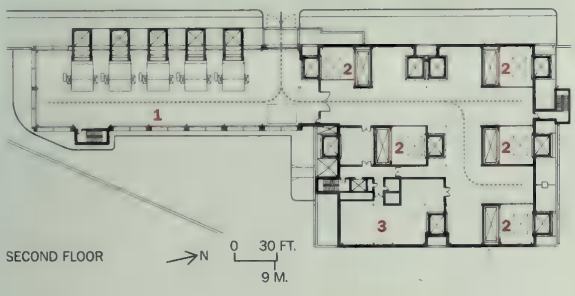
The meticulously detailed building has a Miesian, machinelike appearance that makes no attempt to hide its function. A pressure-equalizing rain screen (below) covers the massive "squirrel-cage" fans.



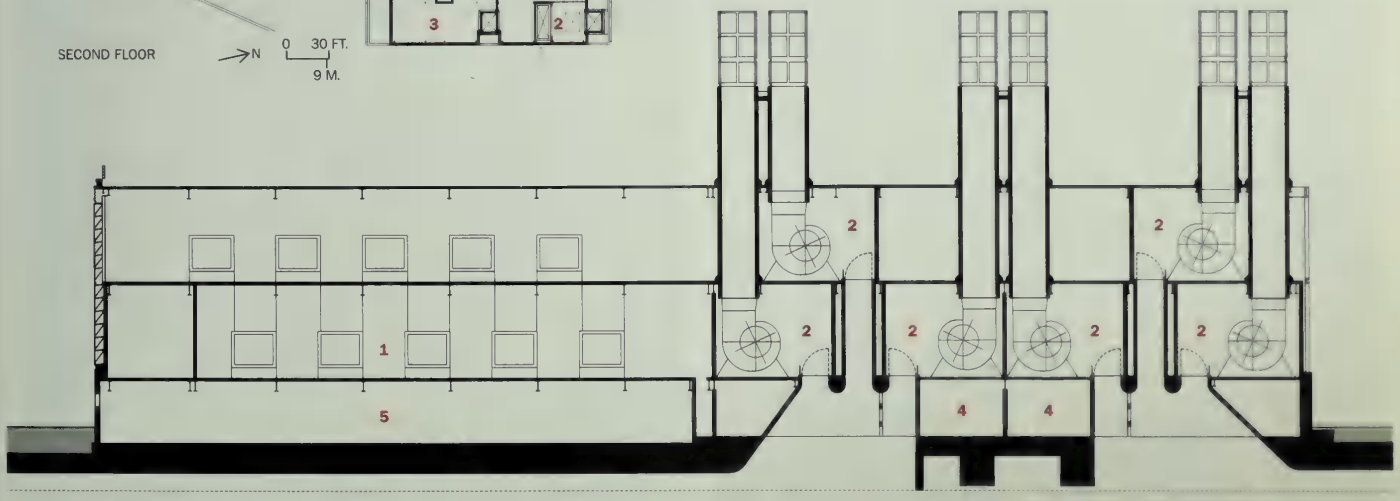


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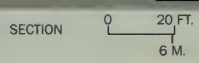




1. *Air-supply room*
2. *Fan plenum*
3. *Fan control room*
4. *Fan and radio equipment*
5. *Electrical equipment*
6. *Harbor tunnel*







A CHILD-CARE CENTER ENTICES ITS CHARGES USING SIMPLE MEANS

A commission for a low-budget 3,000-square-foot child-care center several hundred miles away might not seem sensible for many architecture firms. But Peter Q. Bohlin, FAIA, and his staff trekked from Pennsylvania to the Silver Bay Association, in New York's Adirondack region, because Bohlin Cywinski Jackson have always prided themselves on the diversity of their work.

Located at the southern end of Lake George, the Silver Bay Association is a YMCA conference center that offers programs for Christian spiritual growth and renewal in landmark structures on 600 acres amid the tumbled green mountains. Because entire families are encouraged to participate, the association needed a child-care facility to give adults time for their own activities.

To keep the project lighthearted (but not cloying) and to meet a limited budget, design partner Bohlin enclosed the child-care center in a simple rectangle. Residential shed-roof trusses were united to form a gable roof—a child's image of home—on the entrance side (top right). The short end walls are bearing walls, framed in two-by-sixes. The designers spaced intermediate support columns where they were needed, but there are no internal bearing walls, permitting a free plan, within which partitions can be adjusted as needs change. A reading area, roofed with skewed sheds and supported by angled pipe columns, bursts out of the facade on the water side (middle right).

To keep design costs low, explains Lee Clark, project manager, "we gave the contractor pretty developed design development drawings" rather than a full set of documents. She also made monthly site visits during construction. "We didn't have a lot of details at first but provided them along the way. Not all contractors would work with that."

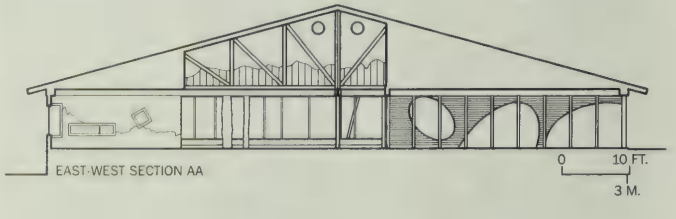
"One of the great pleasures here," comments Bohlin, "is that we were able to develop a connection between the 'bones' of the building and the spatial path [opposite bottom right] you use to move through it." *James S. Russell, AIA*

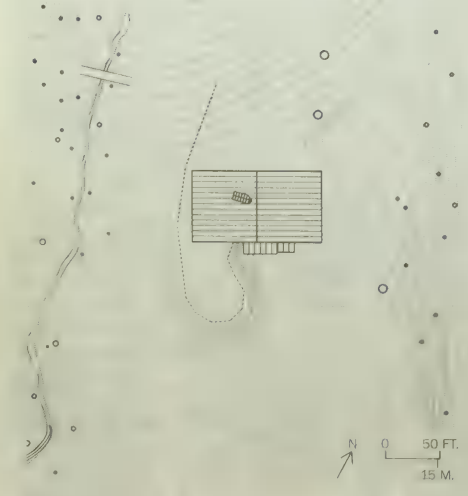
Project: *Marjorie Hilliard Hodges Children's Pavilion, Silver Bay, New York*
Owner: *Silver Bay Association*
Architect: *Bohlin Cywinski Jackson—Peter Q. Bohlin, FAIA, principal-in-charge; Lee Allison Clark, project manager*
Engineers: *E. D. Pons & Associates (structural)*
General Contractor: *Mill Bridge Construction*



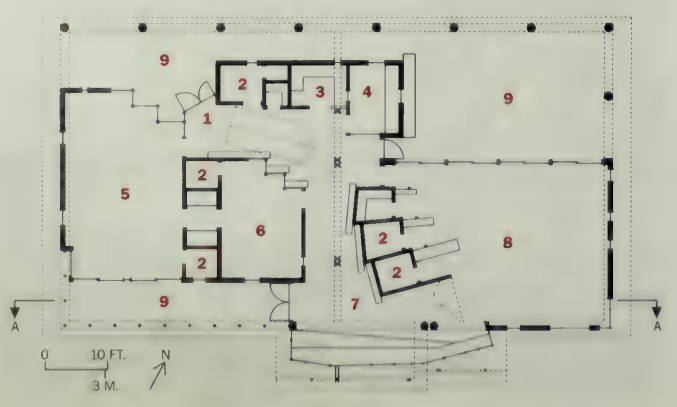


Ample porches allow programs to take place outside in the busy summer months. A play area was made from soil cut from the uphill side (site plan). A wood fretwork (opposite bottom left) and broad overhangs add sun protection in the reading area (opposite top). "You can see how the building works and how it's constructed," says center director Helen Barton. "It stimulates children's imaginations."



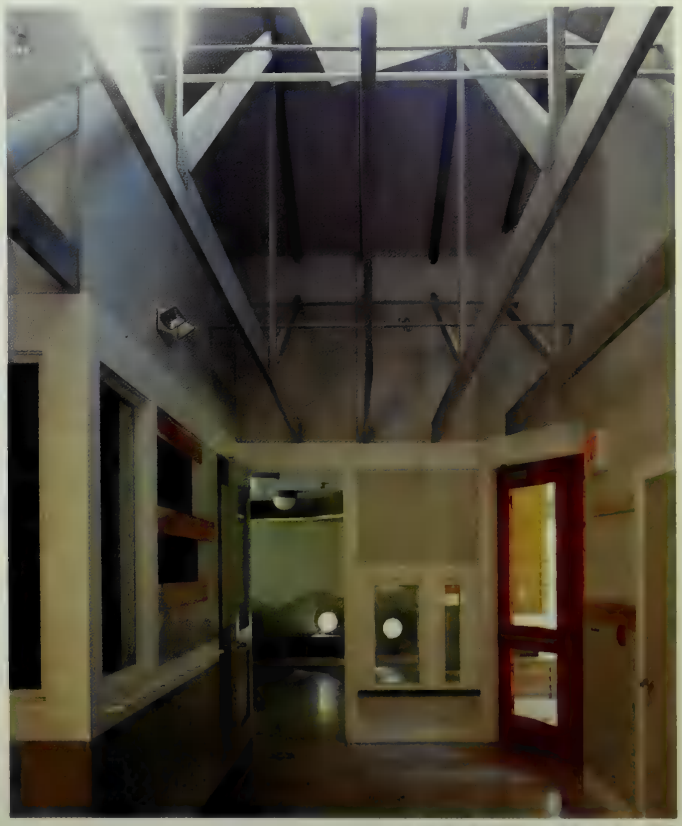


1. *Entrance*
2. *Toilet*
3. *Kitchen*
4. *Office*
5. *Toddlers*
6. *Infants*
7. *Reading*
8. *Preschool*
9. *Porch*









A SCHOOL BUILDING THAT IS MORE THAN THE SUM OF ITS PREFABRICATED PARTS

Toward the end of 1995 an anonymous donor approached the trustees of the Salisbury School, in Salisbury, Maryland, with an intriguing offer. For years the committee had been dreaming of adding an upper school to the private elementary school that has been operating since 1972 in an early, much-acclaimed open-plan building by Hardy Holzman Pfeiffer Associates. The donor promised 26 acres of land adjacent to the existing school and $2.8 million.

There were, however, some strict conditions: another $1 million had to be raised to match the grant within 90 days. And the school had to be built and operating by September 1997—a little more than 18 months from the date of the offer.

What made the challenge even more daunting was that the new building couldn't be just a typical secondary school. The institution's character—its openness combined with what headmaster Stephen K. Barker calls "a carefully structured way of operating, a formal informality"—is embodied in its original building. If the upper school couldn't be equally extraordinary, there was scarcely any reason to build it. Although the school had hired local architects to build several additions to the original structure, the building committee returned to Hardy Holzman Pfeiffer with this new challenge. And despite the shoestring budget—$95 a square foot—and a close-to-impossible schedule, Malcolm Holzman, FAIA, partner-in-charge, said the architects were delighted to return to Salisbury.

In describing the rapport between architect and client, both Holzman and Barker pointed to the same expanse of garish red carpeting at the heart of the original building. It's a period piece, like something that might have been found in the Minneapolis apartment of Rhoda from "The Mary Tyler Moore Show." At the time even RECORD [October 1974] noted its cheerful defiance of conventional taste. For Holzman, the survival of this carpet in very good condition epitomizes the school community's respect for the building. For Barker, it's an indication that, despite appearances and limited budgets, the architects knew what they were doing and built with integrity.

Like the carpet, the open classroom is seriously out of style. At Salisbury, though, what was in many places a pedagogical fad has become a tradition. The school serves a largely agricultural region and is located in a Delmarva Peninsula town best known as the headquarters of the Perdue Chicken empire. Its playful, optimistic, Earth-shoe-era building has been viewed in pragmatic farm-country terms: it's a little weird but it works.

Thus, when the architects made a number of suggestions for the Upper School that most building committees might find strange—such as housing the library and administrative core of the school in a prefabricated salt-storage dome—the trustees were willing to listen.

"The dome cost $30 a square foot," says Ann Coates, head of the building committee. "That freed up money to spend on finishes we couldn't have afforded if we had done stick construction." The structure's roadside roots are still evident, but especially inside, the dome—not unlike Thomas Jefferson's at Charlottesville—represents the library as both the heart and the mind of an educational institution.

The Upper School was designed as three separate structures: the central dome, the classroom wing to its left, and the gymnasium behind. This plan created an obvious site for expansion to the west of the dome, and it also allowed each of the three wings to be considered a separate building for code purposes. Thus, any approval delay for one part of the school wouldn't delay progress on the others. Also, if the school had been reviewed as a single entity, fire sprinklers would have been required, which Coates says the









To enhance the inherent spatial qualities of the 20-faceted dome (opposite), a spire of green art glass, octagonal windows in a spiral arrangement, and a copper roof were added.

1. *Entry*
2. *Library/offices*
3. *Classroom*
4. *Gymnasium*
5. *Change rooms*
6. *Future addition*

PHOTOGRAPHY: © DAVID FRANZEN

building committee decided not to spend its limited budget on. It was a design-build process, in which key decisions were made on site at the last minute.

From the outside, the school appears to be an assemblage of prefabricated parts: the dome, the corrugated-steel arches that connect the domes to the vinyl-sided wings, the aluminum antennae that serve as trellises. Yet components that most schools would buy off the shelf, such as student lockers, were built on site. Indeed, the building has been carefully crafted, albeit from humble materials like oriented-strand board and structural tile that are rarely accorded such loving attention.

Classrooms are usually the most repetitive element of a school building, but here each one is unique in size, shape, and character. Each classroom is literally at its own level, but because of the high ceilings and sight lines up and down, pupils get the sense of being in a larger space. Even the teachers' offices have glass windows that are visible from the classrooms. Though the lack of privacy can sometimes be quite demanding, Barker says the school's openness is essential to its sense of togetherness. "The architecture assists us in building a sense of community," Barker says. "Everybody has to work together."
Thomas Hine

Thomas Hine was architecture critic of the Philadelphia Inquirer *from 1973 to 1996 and is the author of a forthcoming history of the American teenager.*

Project: *Salisbury Upper School, Salisbury, Maryland*
Architect: *Hardy Holzman Pfeiffer Associates (design architects)—Malcolm Holzman, FAIA, partner-in-charge; Robert Almodovar, project manager; Jeeyoon Lim, project architect; Hakee Chang, Joyce Louie, design team*
Associate Architect: *Becker Morgan Moore Olds & Richter*
Engineers: *Davis, Bowen & Friedel (structural); Philip Parker Associates (civil)*
General Contractor: *Gillis Gilkerson*

Sources
Prefabricated plywood dome structure: *Domar Bulk Storage System*
Connectors: *Artec Steel Buildings*
Aluminum doors: *Kawneer*
Acoustical ceilings: *Armstrong*
Paints and stains: *Sherwin-Williams*
Vinyl composition tile: *Congoleum*







Salisbury Upper School's prefabricated components, such as the salt-storage dome (above and top right) and a corrugated-metal passage that links two portions of the building (right), stretched the budget, allowing for extras like skylights, neon sculpture, and shelves handcrafted of oriented-strand board (opposite).





NEW RAILROAD BRIDGE FOCUSES VIEWS AND CHANGES PERCEPTIONS

The Tennessee Bicentennial Capitol Mall Railroad Trestle opens the southern boundary of Nashville's mall and preserves the last remaining views of the historic state capitol grounds. Prior to creation of the mall, a new 19-acre park north of the Tennessee Capitol, the railway lines ran on the earth berm that divided the city and discouraged development to the north. At the same time, this lack of development helped protect the view of the capitol.

While earlier proposals for the area had dealt with the tracks, still used by freight trains, as an eyesore, Tuck Hinton Architects' bridge concept was based on the importance of railroads to Tennessee history. To open up the mall without a major track rerouting, the open steel bridge was positioned about 50 feet north of the existing earth-berm railroad tracks. The 500-foot-long trestle spans the width of the mall between the two limestone-clad street bridges, which serve as underpasses for automobile traffic. Under the bridges are restrooms and a visitors' center.

The resulting trestle not only encourages pedestrian traffic underneath the gentle arch but focuses views through the mall. "It has also helped change perceptions about this area of the city," Hinton explains. "Now there is a different attitude about the way the downtown might expand."
Linda Hallam

Project: *Tennessee Bicentennial Capitol Mall Railroad Trestle, Nashville*
Owner: *Tennessee Building Commission*
Architects: *Tuck Hinton Architects (schematic design); Jon Coddington, David Johnson, Charles Warterfield, SSOE Inc. (design advisors); Nathan Evans Taylor Coleman Foster Architects (design development and construction administration)*
Structural Engineers: *Stanley D. Lindsey and Associates*

Linda Hallam edits shelter books for Meredith Corp., Des Moines, Iowa. She was formerly the editor of the homes section of Southern Living *magazine.*



A new steel railroad trestle anchors one end of the capitol mall. While other proposals dealt with the existing railroad tracks as an eyesore, Tuck•Hinton used them to celebrate the role of trains in the state's history.

PHOTOGRAPHY: © MICHAEL J. ELLIS (THIS PAGE); PERRY QUEEN (OPPOSITE TOP); PETER VEITH (OPPOSITE MIDDLE AND BOTTOM)

A "SAILING SHIP" CONNECTS CAMPUS PEDESTRIANS TO PACIFIC OCEAN

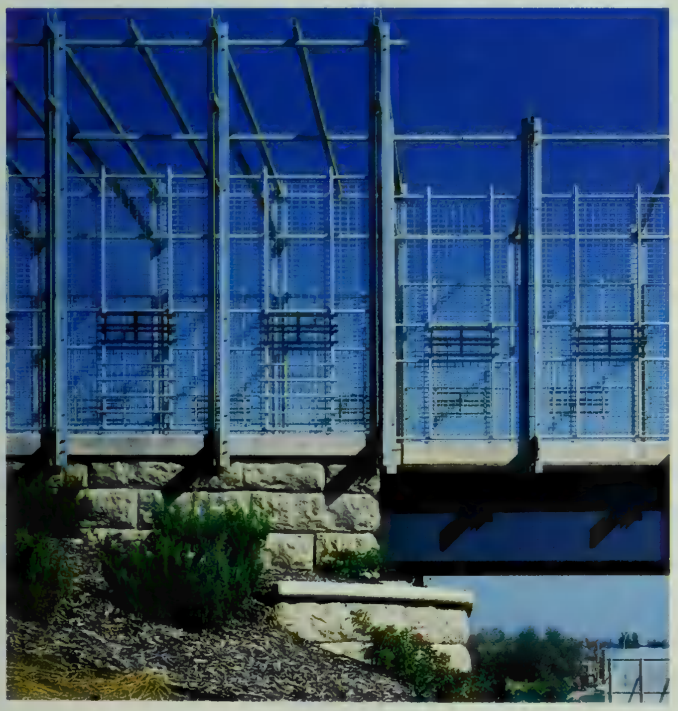
The Scripps Crossing Pedestrian Bridge in La Jolla, California, floats like a rigged sailing ship above La Jolla Shores, one of the city's most scenic streets. A key link in the master plan for the University of California, San Diego, the 140-foot-long bridge provides a pedestrian and wheelchair connection between the upper campus and the Pacific Ocean research pier of the Scripps Institute of Oceanography.

Engineer Frieder Seible of SEQAD Consulting Engineers did the initial concept for the bridge. He worked with the architects, Taal Safdie and Ricardo Rabines, to hang the bridge from cables encased in stainless-steel tubes from a 60-foot-tall concrete pylon. The slender cross-section of the walkway and the thin reflective cables create a transparent design that doesn't hinder the view from either the street or the bridge.

Fluorescent lighting recessed beneath the handrails washes light onto the concrete walkway. At night, when the light bounces up to illuminate cables and pylon, all visual supports seem to disappear. *L.H.*

Project: *Scripps Crossing Pedestrian Bridge, La Jolla, California*
Architect: *Safdie Rabines Architects—Taal Safdie, Ricardo Rabines, partners-in-charge*
Design Engineer: *SEQAD Consulting Engineers—Frieder Seible*
Engineers: *Burkett and Wong Engineers (structural); DLSK Professional Engineers (electrical)*





PEDESTRIAN BRIDGE'S ARBORLIKE GRID IS INSPIRED BY NEARBY GARDEN

The 245-foot-long Chanhassen Pedestrian Bridge spans a busy four-lane highway and links a residential development with downtown Chanhassen, Minnesota, where the city hall, library, and schools are located. It also serves as a visual gateway to the Landscape Arboretum, one of the Twin Cities' most visited sites.

The arboretum, about five miles west of the bridge, inspired architects Meyer, Scherer, and Rockcastle to incorporate an arborlike structure of galvanized-steel tubes, angles, and bars into the composite, poured-concrete deck and flange-steel-beam structure. The trellis structure, at 10 and 12 feet above the walkway, alters in appearance from the highway as the light and shadows change from hour to hour and from season to season. The pedestrian experience combines sculptural openness at the approach with a secure sense of enclosure inside the structure, encouraged by the steel handrails and vertical ribs.

In keeping with the intention that the bridge should be a landmark for highway and community, the landscape architects suggested planting red-flowering Dropmore honeysuckle at the base of both abutments and in the central pier, which serves as a large planter. As the perennial vine matures, the steel trellis will be intertwined with the bright blooms. *L.H.*



Project: *Chanhassen Pedestrian Bridge, Chanhassen, Minnesota*
Architects: *Meyer, Scherer, and Rockcastle—Tom Meyer, partner-in-charge; Mark Burgess, project architect*
Engineers: *Strgar-Roscoe-Fausch (structural and construction administration); Ericksen Ellison and Associates (electrical)*
Consultants: *Hoisington Koegler Group (landscape architect); Schuler and Shook (lighting)*

STUDENTS STARE DOWN THE STARS AT VASSAR'S NEW OBSERVATORY

Because light pollution in most populated areas makes stargazing impossible, few observatories are being built today. One exception is Vassar College's Class of 1951 Observatory in Poughkeepsie, New York, named for the alumni group that raised the funds to build it.

Vassar's 1860 brick observatory, built by Mariah Mitchell, the first prominent female astronomer in America, still stands on the main campus. Its view of the galaxies has been blocked by ambient light and nearby buildings. Furthermore, heat stored in the building's masonry walls is released into the atmosphere around the building, and this rising air refracts the light from the stars, making them shimmer slightly. To the naked eye the interference is negligible, and it did not affect the telescopes in use when the observatory was built. But the effect on today's high-powered telescopes would be so extreme that they could not be placed in the old observatory.

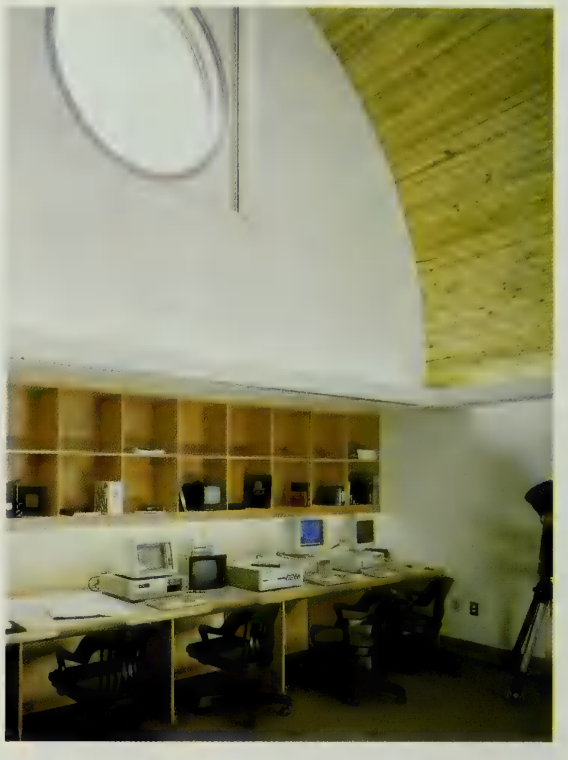
"We really enjoyed learning about observatories," says architect Harold Roth, FAIA, of Roth and Moore Architects, "and getting into nuances of detailing having to do with angles of the telescope and exactly how to place it on the site." The new observatory is located next to the Vassar golf course, at the highest point on campus, where there is little light or thermal pollution to interfere with observation of the galaxies.

The 22-foot-diameter domes, each housing a reflecting telescope, were manufactured by a firm that specializes in observatory structures. Their scale and proportions influence the rest of the design, as does their aluminum-on-steel skin, chosen for its heat-reflecting quality. To further ensure that warm air inside the domes is minimized, they have been left unheated.

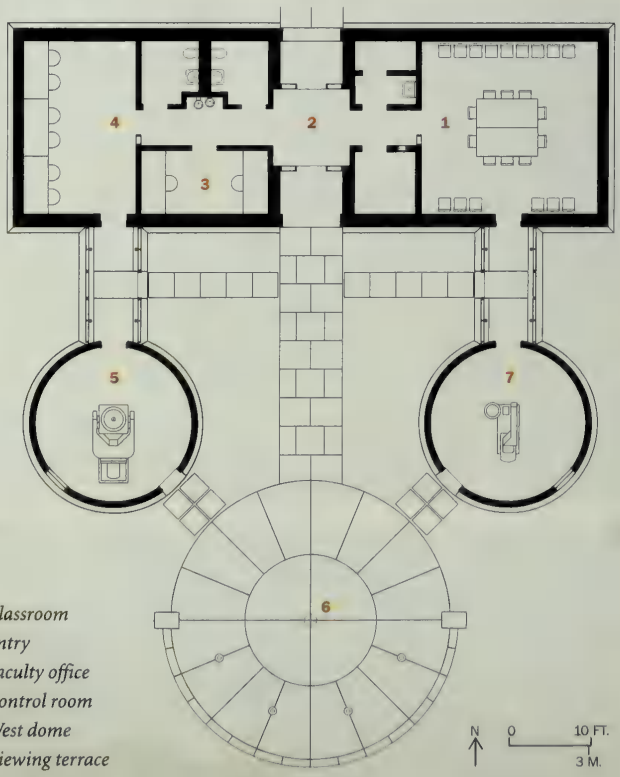
The position of the telescopes, the exterior viewing doors—known as shutters—and the direction the domes face are set by computers in the control building. Spanning between the two short passages that lead to the domes, the control building also contains a classroom and work space for faculty members. Its half-round roof is supported by laminated wood arches. As with the domes, the roof is aluminum-finished to reflect heat, and it is superinsulated to keep heat loss from disturbing the view.
Charles Linn, AIA

Project: *Class of 1951 Observatory, Vassar College, Poughkeepsie, New York*
Architect: *Roth and Moore Architects—Harold Roth, FAIA, and William F. Moore, AIA, partners-in-charge; David Thompson, AIA, project architect*
Engineers: *Spiegel Zamecnik & Shah (structural); BVH Engineers (mechanical/electrical); Hayward and Pakan Associates (civil)*

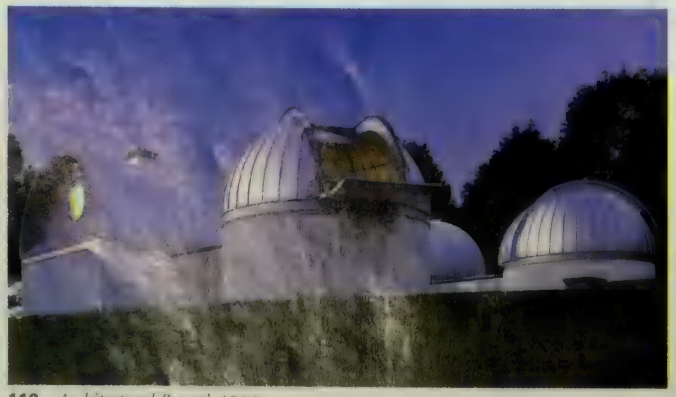
Sources
Domes and dome controls: *Ash-Dome*
Metal siding: *Reynolds Metals*
Metal roofing: *Berridge*
Laminated arches: *Gaylon Lumber*



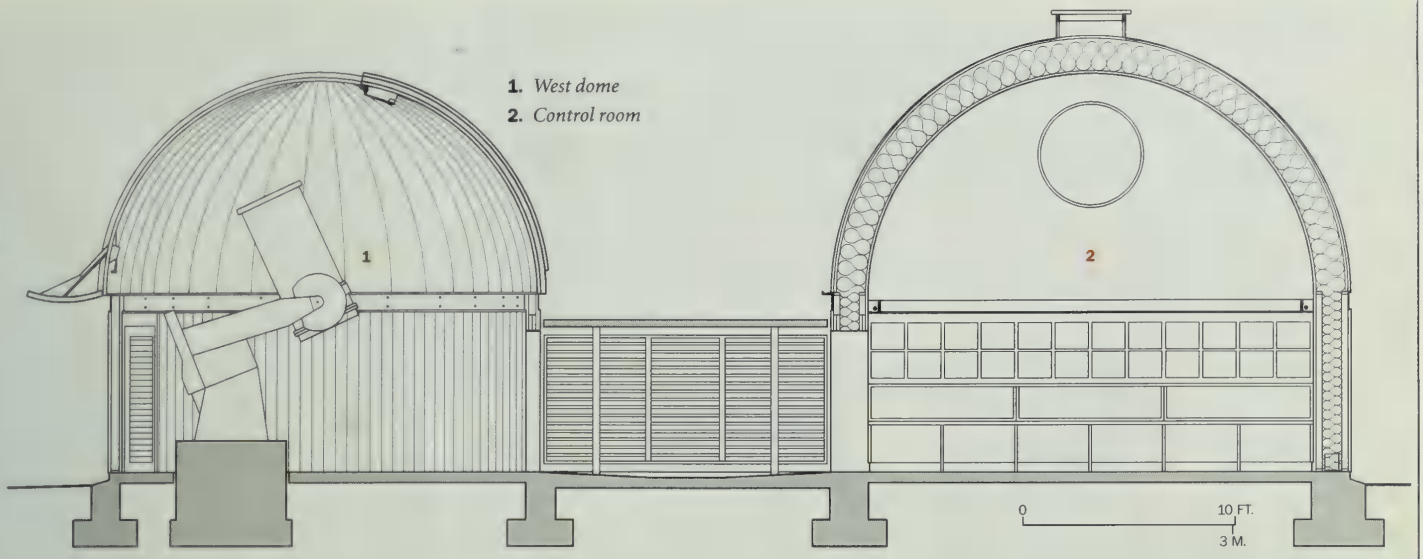
The position of the two telescopes is controlled by computers located in the observatory's control room (above). The roof and ceiling of the control building are supported by laminated wood arches.



1. *Classroom*
2. *Entry*
3. *Faculty office*
4. *Control room*
5. *West dome*
6. *Viewing terrace*
7. *East dome*



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The domes rotate to give the telescopes access to most of the sky. They are unheated and uninsulated to avoid radiating warm air that would disturb the view of the stars.

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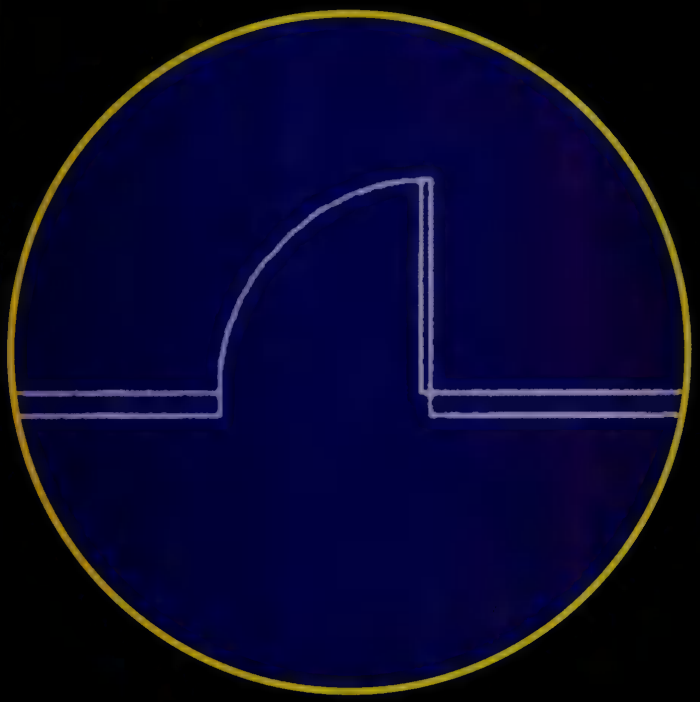
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ADAPTIVE REUSE

Tackling the Really Big Ones

PROJECTS SUCH AS MILITARY-BASE CONVERSIONS, NATIONAL HERITAGE AREAS, AND REDEVELOPING OLD DOWNTOWNS ARE LEADING ARCHITECTS TO WORK AT A HEROIC SCALE.

by Clifford Pearson



1

Los Angeles

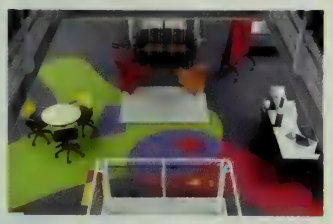
Bobrow/Thomas and Associates tore down the walls to turn offices from the 1960s into art studios at the Otis College of Art and Design.



2

Salt Lake City

Large floor plates and a heavy-timber interior frame give an old hardware warehouse new cachet as a speculative office building.



3

Lexington, Kentucky

By saving an International Style department store, the James N. Gray Company was able to create a new home for itself.



4

Poughkeepsie, New York

Detective work into old drawings and a sensitivity to the Arts and Crafts style helped Linda Yowell design an admissions center for Vassar College.

What do you do with an old mining town once the silver or coal runs out and the major employer calls it quits? How do you handle the closing of a military base and its conversion to civilian use? How do you revitalize an entire region where the dominant industry has withered away but left a physical and historical legacy that continues to resonate with the people who live there? These are just a few of the challenges facing architects and planners involved in historic preservation today. More than just individual buildings, adaptive-reuse projects are increasingly encompassing great swathes of territory: historic districts, city centers, cultural landscapes, and industrial heritage areas.

"The scale of intervention has changed over the last 20 years," states John Stubbs, vice president for programs for the World Monuments Fund (WMF). "This comes with the maturing of the field of historic preservation," explains Stubbs. The WMF's latest list of the world's 100 most endangered sites, for example, includes four historic city centers and three cultural landscapes (such as Lancaster County, Pennsylvania, where the Amish have built and farmed for three centuries).

The expanding scope of adaptive-reuse projects comes at a time when renovation is accounting for a growing percentage of total construction. In 1980 additions and alterations represented 25 percent of all private, nonresidential construction in the country, according to the U.S. Department of Commerce. By 1997 more than $32 billion, or 39 percent, out of a total of $83.1 billion spent on private, nonresidential construction was for these renovation projects. Looking at the future, *U.S. Industrial Outlook, 1998*, produced by the Department of Commerce and McGraw-Hill/DRI, forecasts that "the repair and renovation market should grow slightly faster and should be less cyclical than the new construction market over the next five years."

Reasons to renovate: the recycling ethic and tax credits

There are a number of explanations for these growing numbers. "Buildings today are seen as material resources that shouldn't be just thrown away," says WMF's Stubbs. In this regard, the "green" movement and a general sentiment in favor of recycling all kinds of resources has paved the way for adapting old buildings to new uses, he explains.

In addition, federal tax credits for restoring historic buildings have made many projects financially possible. Although the number of projects taking advantage of federal tax incentives for rehabilitating



A reuse plan for the Alameda Naval Air Station near San Francisco is being prepared by EDAW. It envisions a 20-to-30-year process through which a mix of civilian uses will be developed in phases.

historic buildings dropped radically after changes in the law in 1986, the number of applications for the credits has been rising since then. In the 19-year history of the tax credits up to 1996, more than 27,000 historic rehabilitation projects have been certified and nearly $18 billion of private investment has been leveraged.

Reinventing old downtowns

Americans are also rediscovering whole sections of their cities, often the older parts. "People are moving back downtown," states Peter Brink, vice president for programs at the National Trust for Historic Preservation. "Young people want to live there before they start families and older people are coming back after raising kids in the suburbs," he says. Not only are people moving downtown, but they are changing the ways in which these areas work—converting office and industrial buildings to residential use and bringing 24-hour activity to places that once shut down after 5 pm. "There's a proliferation of conversions of industrial buildings into residential lofts all over the country. I see it happening in Denver, Omaha, even Lincoln, Nebraska," says Brink.

In cities such as New York and Boston, where residential lofts are old hat, a new wrinkle has started to emerge: the conversion of office towers into residential buildings. In the process, more than just individual buildings are changing; entire downtown districts are adapting to new uses as well. For example, in New York, the city is in the process of changing zoning laws and providing incentives for developers to convert office towers in the Wall Street area to apartment buildings. The personality of Wall Street is set to change in a dramatic way.

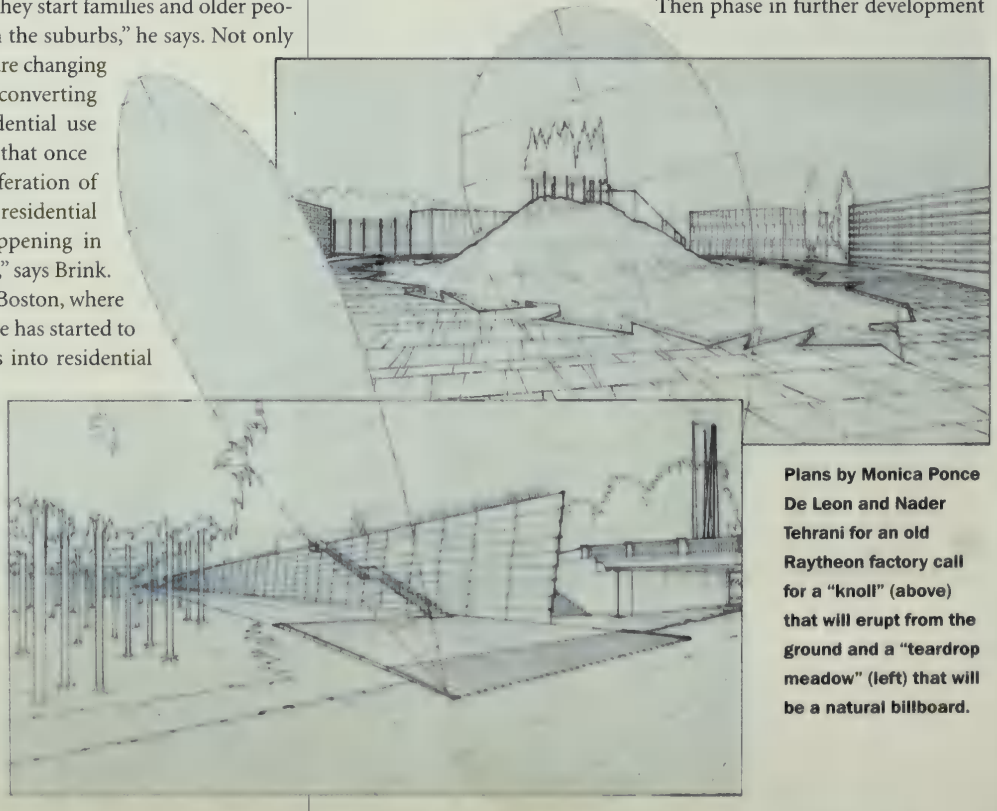
In Boston, Jung/Brannen Associates recently converted the 30-story Beaux Arts office tower built on top of the city's Greek Revival–style Custom House into a time-share apartment hotel. The building had lost its major tenant, the General Services Administration, in 1985 and a string of developers had tried a variety of approaches over the years to renovate it—everything from combining it with a nearby building to turning it into a full-service hotel. Jung/Brannen's new Marriott's Custom House (opposite top) is part of the changing face of Boston's older downtown areas.

From swords into plowshares

A similar kind of scale (though a very different set of challenges) faces architects and planners figuring out what to do with the sprawling military bases that the Pentagon has decided to close. Nearly 200 bases have been earmarked for decommissioning in four rounds of closings (1988, 1991, 1993, and 1995), and some are gigantic in size. In Orange County, California, for example, El Toro Marine Corps Air Station encompasses 4,738 acres. Because of their size and the mix of uses found on them (usually housing, retail, and industrial buildings, in addition to military facilities), these bases are like entire cities looking for new reasons to exist.

"There's no owner's manual for military bases," says Allen Folks, a senior associate with EDAW, a large landscape architecture and planning firm based in San Francisco that has worked on about 15 military-base conversions since 1988. EDAW is currently doing planning work on the Alameda Naval Air Station, across the bay from San Francisco, as well as several other bases. EDAW's approach to adapting Alameda to civilian use is to divide the 1,522-acre site into seven discrete areas, each with its own character and mix of uses, and to progress in phases.

Folks's advice to communities wrestling with military-base reuse projects is, "Don't feel like you need to use all of the land all at once. You can land-bank part of the site. Start small and move incrementally, perhaps beginning with the old or historic part of the base. Then phase in further development



Plans by Monica Ponce De Leon and Nader Tehrani for an old Raytheon factory call for a "knoll" (above) that will erupt from the ground and a "teardrop meadow" (left) that will be a natural billboard.

in conjunction with upgraded infrastructure." One of the most difficult challenges is dealing with the environmental cleanup needs that most bases have. Oil and fuel seepage into the soil and chemical spills are not unusual problems. Folks recommends that after assessing the degree of environmental contamination and taking inventory of the site's assets, redevelopment authorities "need to go to market immediately. Get the word out to the development community about what you have. Hire a brokerage firm and a marketing consultant and promote the assets you have." As for developing successful plans, Folks says, "The key is creating activity and a mix of uses. Looking for a single-use savior" such as a new airport or college campus "can be a big problem if it doesn't work out."

Finding new uses for towns and old factories

Military bases aren't the only megaprojects in the adaptive-reuse realm. Old mining towns such as Aspen and Vail, Colorado, have been reinvented successfully as resort destinations, and cities such as Savannah, Georgia, have used their stock of historic buildings to attract tourists and accommodate related businesses such as restaurants, hotels, and stores.

Shifts in industrial production in the U.S. have also left some large tracts of land available for adaptive reuse. One such site is a former manufacturing facility in Wayland, Massachusetts, owned by Raytheon, the military contractor that makes the Patriot missiles. While the closing of the 400,000-square-foot factory was a blow to the local economy, the town of Wayland, a suburb of Boston, sees it also as an opportunity to create a new town center to complement its existing commercial center. To their credit, both the local government and Raytheon have decided to be innovative in their approach—hiring the young team of Monica Ponce De Leon and Nader Tehrani, whose firm Office dA is based in Boston.

Ponce De Leon and Tehrani's plans call for "reframing the suburban landscape" by creating public spaces that highlight various natural features or play off of existing building forms (opposite bottom). While their plans include a mix of uses (offices, stores, housing, and civic buildings) and are intended to progress in phases—just as more conventional proposals elsewhere do—the architects have designed some unusual out-

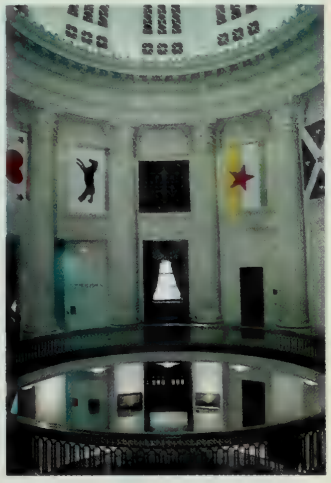
"THE SCALE OF INTERVENTION HAS CHANGED OVER THE LAST 20 YEARS," SAYS WMF'S JOHN STUBBS.

door areas where the existing landscape is "reframed and reconfigured for [its] surreal potential." These include the Wayland Knoll, a large hill that seems to erupt from the earth and serves as a focal point for development such as a new public safety building; the Teardrop Meadow, an elongated landform that rises up and tilts so it acts almost like a natural billboard for the town; and the Parking Grove, where cars park within a grid of evergreen trees.

"We use infrastructure and public spaces as the glue holding everything together," explains Tehrani. "The idea was to manipulate the landscape to give a strong identity to the site," says Ponce De Leon. Although radical in design, the outdoor areas respond to the needs of Wayland residents who said they wanted places where public events and celebrations could occur.

A relatively new (and sometimes controversial) kind of adaptive-reuse project is the cultural or industrial heritage area, which may encompass hundreds of square miles in more than one state. Focused on particular themes—often having to do with an important but dying industry such as coal mining or steel—such projects attempt to package and market whole regions to businesses and tourists.





A Beaux Arts office tower in Boston has been converted by architects Jung/Brannen into Marriott's Custom House, a time-share apartment building, and its historic rotunda (above) has been preserved.

The first national heritage area was the Illinois and Michigan Canal National Heritage Corridor, designated by Congress in 1984. Designation usually includes federal funding and can encourage municipalities, counties, and states in the area to work together to revitalize historic town centers, provide interpretive programs at various sites, preserve historic resources, create unified signage to help tourists find their way through the area, and establish a shared identity. Unlike national parks, which are clearly defined geographically and publicly owned, heritage areas may include isolated sites surrounded by great stretches of private property. Today there are 15 national heritage areas, of which nine were designated in 1996.

Controversy follows a few projects

Established by separate acts of Congress, usually with funding of less than $8 million, heritage areas are popular projects. A few, though, have been accused of being porkbarrel projects that powerful Congressmen use to curry favor with voters. The Steamtown National Historic Site around Scranton, Pennsylvania, for example, has been attacked for its loosely defined mission and its dearth of results in comparison to the amount of money allocated. (Though it follows many of the same principles as heritage areas, Steamtown has a different designation—as a national historic site.) Another criticism is the program's lack of teeth; designation doesn't bring any legal protection to buildings or sites in the area.

As a tool for focusing preservation and revitalization efforts, though, the heritage-area program can make an important contribution to some economically depressed parts of the country. "We have lots of anecdotal evidence from businesses showing that designation has been a help in attracting economic development," reports Samuel Stokes, the acting manager of the program at the National Park Service.

"The jury is still out" on the success of heritage areas, says the National Trust for Historic Preservation vice president Brink. The best heritage areas, he says, have "a strong organizing thread, whether it's a canal or theme, and tell a story that's historically important."

The role of architects in megaprojects like heritage areas, military-base conversions, and the transformation of downtown districts is not always clear, but it often involves giving form to a common vision or direction that others can rally around and take forward. ■

1 Otis College of Art and Design, Los Angeles

STRIPPING AWAY AN OFFICE BUILDING'S BUSINESS CLOTHES, BOBROW/THOMAS REVEALS THE ART SCHOOL HIDDEN INSIDE.

by Clifford Pearson

Project: *Otis College of Art and Design, Los Angeles*
Architect: *Bobrow/Thomas and Associates—Michael Bobrow, FAIA, Julia Thomas, design principals; Greg Doench, senior designer; Bob Cull, project manager; Hillary Jaye, signage designer; Jacky Yung, Michael Olshefski, project team*
Engineers: *KPFF Consulting Engineers (structural); Syska & Hennessy (mechanical and plumbing); Norman A. Cohen Associates (electrical)*
Consultants: *Integrated Lighting Design (lighting); Martin Newsom Associates (acoustical)*
General Contractor: *Cannon Constructors*

Adaptive use: *Office building to art college*
Size: *115,000 square feet; seven stories, plus basement*
Cost: *$28 per square foot, plus $7 per square foot for fire stair*

Call it conversion by subtraction. To turn a tired office building from the 1960s into a hip college of art and design, Bobrow/Thomas and Associates (BTA) tore down most interior partitions, stripped off colored paint from precast walls, and removed tinted film from glazing. Ironically, by taking away much of the old design and opening up interior spaces, BTA increased the visual impact of one of the original building's most characteristic features: its bands of punch-card windows.

Designed for IBM by Eliot Noyes in conjunction with Quincy Jones, the building was a conventional office tower on the inside with private offices wrapped around a service core. Floor plates considered small by today's megastandards (they're under 15,000 square feet), a less-than-prime location in the Westchester area of Los Angeles, and the need for seismic upgrading prompted IBM to move out of the building and find office space elsewhere, leaving the building vacant.

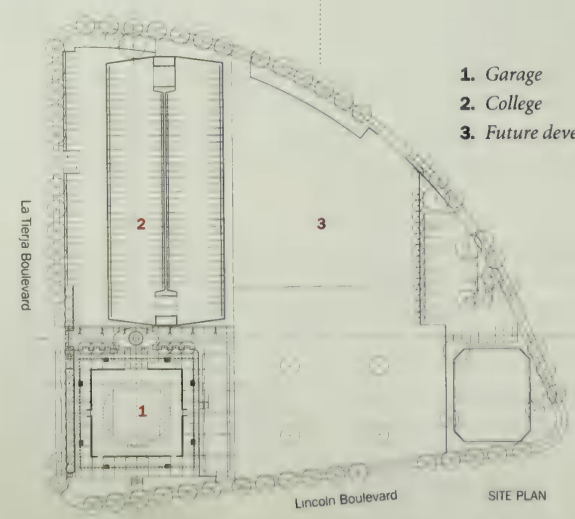
Finding a new home

Meanwhile, Michael Bobrow and his partner, Julia Thomas, were helping the Otis College of Art and Design find a new home. Drug wars in MacArthur Park, where the school was located, had convinced Otis's board of trustees to leave the neighborhood. For several months the college explored the possibility of moving into an old department store that the Los Angeles County Museum of Art had acquired next to its buildings, but negotiations ended without a deal.

Under intense time constraints and with a very limited budget, Otis bought the empty IBM building and its 4.5-acre site (including a parking garage) for just $5 million at the end of 1995. In January 1997, with design and construction having been completed in less than 14 months, the college moved in. The cost of construction was a remarkable $35 per square foot.

"Our approach was to create a work-in-progress, to design unfinished art lofts rather than traditional spaces," explains Michael Bobrow, FAIA. "We also wanted to create a sense of community" among the various departments, says Julia Thomas. Taking down partitions, removing hung ceilings, and opening up interior spaces were ways of merging the firm's two tasks—resulting in flowing studio spaces that encourage people to walk around and see what's being done in other departments.

"We wanted a more integrated approach to learning," states Neil Hoffman, the president of Otis. "At most art schools, each department has its own turf. Here we wanted to encourage interaction."



1. *Garage*
2. *College*
3. *Future development*

SITE PLAN

The architects took advantage of 14½-foot-high ceilings on the ground floor to create an art gallery for the entire school to share (right). Other common facilities such as a café and a lounge are also on this floor.

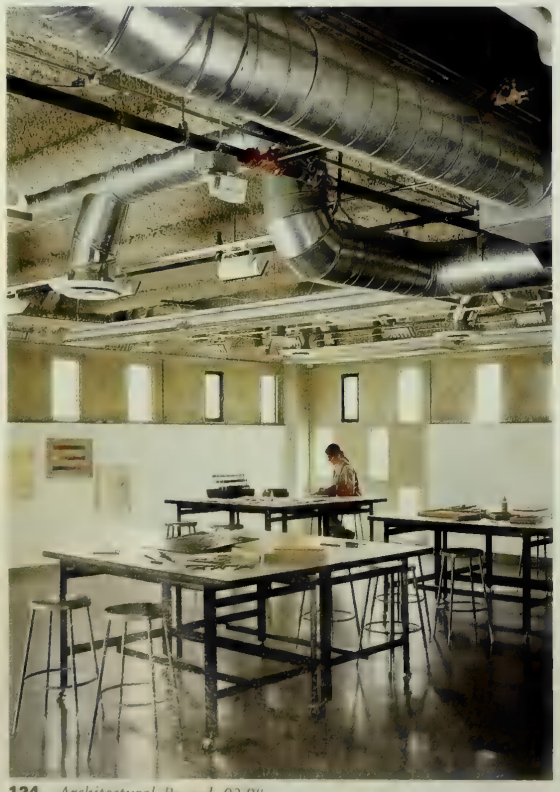


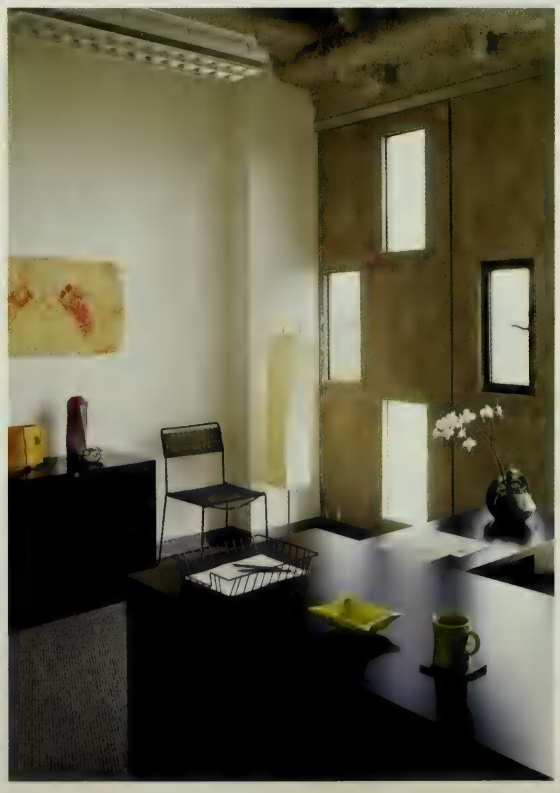


The building's exterior was restored (above), while 200 of its punch-card windows were made operable. On the inside, precast-concrete panels were sandblasted to remove paint and hung ceilings were eliminated to add height to spaces such as a gallery on an upper floor (right).







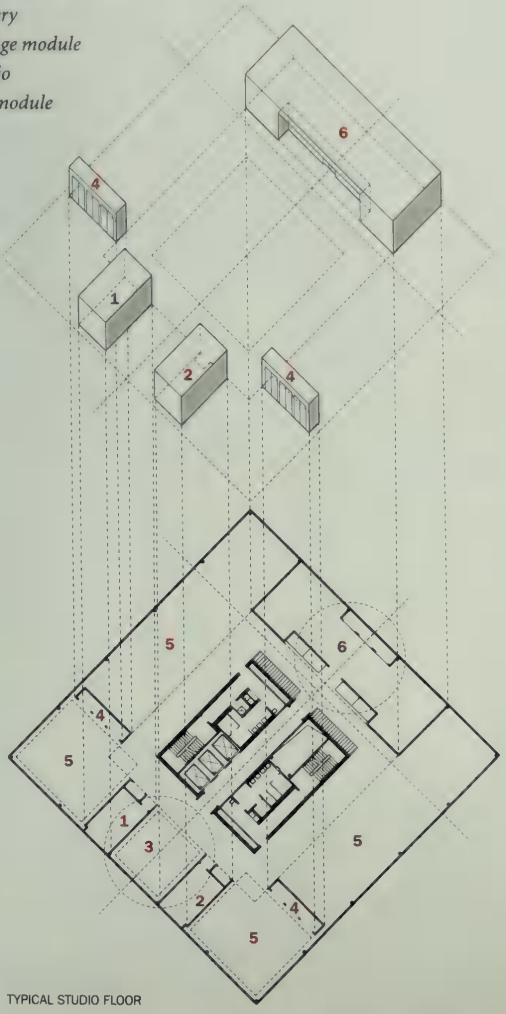


By removing most of the interior walls, BTA opened up views of the checkerboard fenestration in work areas (above) and offices (left). In studio spaces, gypsum board is pushed up against the building envelope to create a sense of layering and provide tackable surfaces (far left). A library (opposite left) is housed on the third floor. A 12-foot-wide circulation zone flows directly into studio space and a gallery (opposite right), eliminating the need for an enclosed corridor.





1. *Office module*
2. *Conference module*
3. *Gallery*
4. *Storage module*
5. *Studio*
6. *Lab module*



TYPICAL STUDIO FLOOR

Before any work could begin on the inside, the architects had to upgrade the building to meet new seismic codes. This involved reattaching precast-concrete panels to the building's structure using flexible connections and silicon sealant, and adding shear walls to the concrete parking structure. BTA also added steel to the main building's third floor to support the weight of the books in the school's library.

Although the architects thought about recladding the building, the budget wouldn't allow it. In the end, they replaced about 200 of the building's 1,000 punch-card windows with operable versions of the same dimensions.

Opening up the floor plans

On the inside, the most important move made by BTA was to eliminate the original egress corridor surrounding the building's central core, allowing the studio spaces on each floor to flow uninterrupted from an open circulation area in the center. With the help of a code consultant, the architects were able to persuade the city's building department to allow this unusual arrangement, as long as the 12-foot-wide circulation zone was free of permanent obstructions over 5 feet 9 inches high.

Within the open loftlike spaces of each floor, BTA inserted enclosed areas, or modules, for laboratories, offices, conference rooms, and storage. These modules help break up the open work area into discrete studios and define a gallery area on the east side of each floor.

With shared facilities (such as computer lab, wood shop, and metal shop) located on each of the four studio floors, the design encourages students and faculty to move throughout the building and encounter people from other departments. Each of the studio floors also has an area reserved for first-year core studies, so freshmen are exposed to the work of students ahead of them.

Throughout the eight floors of the building (seven of which are above ground), an industrial aesthetic was employed. New air ducts and mechanical systems were left exposed, tough materials like sealed concrete and vinyl tiles were specified for flooring, and cut edges of plywood cabinetry were revealed. Five-foot-eight-inch-high gypsumboard walls push right up against the building's envelope, covering some windows and creating a sense of layering that is an important part of BTA's design approach. ■

Sources

Apple-ply and birch cabinetwork: *Jeffrey Trott Industries*
VCT flooring: *Armstrong, Stone Tex*
Acoustical spray: *International Cellulose Corp.*

2 Salt Lake Hardware Salt Lake City

FFKR ARCHITECTURE CONVERTS AN OLD WAREHOUSE INTO OFFICES AND HOPES TO JUMP-START REDEVELOPMENT IN AN INDUSTRIAL PART OF TOWN.

by Clifford Pearson

Project: *Salt Lake Hardware, Salt Lake City*
Owner: *SLHNET Investment*
Architect: *FFKR Architecture/ Planning/Interior Design—M. Louis Ulrich, AIA, partner-in-charge; Russ Bachmeier, Kathryn Anderson, AIA, Hans Fagerlund, Oktai Parvaz, AIA, David Winchester, AIA, design team*
Engineers: *Bush & Gudgel (civil); Colvin Engineering Associates (mechanical); D. George Hansen (structural); BNA Consulting Engineers (electrical)*
General Contractor: *Duane Marsala*

Adaptive use: *Warehouse to office building*
Size: *225,000 square feet; five stories*
Construction budget: *$10 million*

When it was erected in 1909, the Salt Lake Hardware building was the largest warehouse between the Missouri River and California. Today the five-story, 225,000-square-foot building houses mostly office workers, and the only hardware in sight is the computer on every desk.

Converted into a speculative office building and fully leased within six months of its opening in March 1996, Salt Lake Hardware (the old name has been preserved along with the bricks) is reviving interest in an industrial part of town that was on the skids. As the first large-scale project in what is now being called Salt Lake City's Gateway district, the building may be a catalyst for future development and a model for adapting old structures to new uses.

The developer of Salt Lake Hardware, John Williams, has been saving old buildings in the city for a couple of decades, successfully turning them into restaurants, shops, and offices. He has teamed up with M. Louis Ulrich, AIA, of FFKR Architecture on several projects, including the conversion of an automotive repair shop into the upscale Metropolitan Restaurant. The developer and the architect are now working on saving a Ford Motor Company assembly plant designed by Albert Kahn and turning it into offices.

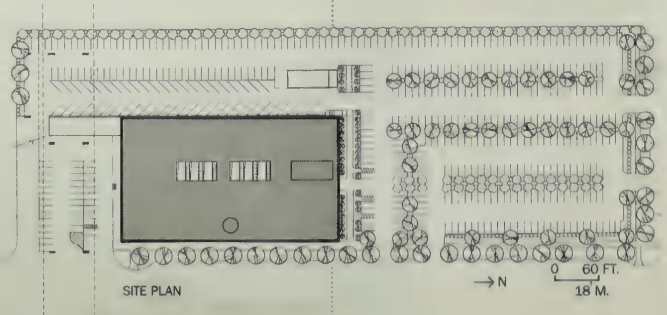
At Salt Lake Hardware, Williams and Ulrich approached most of the building's exterior as a preservation effort. They restored the main (east) facade to its original glory—cleaning bricks with water, repainting them, and restoring old fire escapes, fire bells, and a large rooftop water tower. All the windows on this elevation are original stock, some of them salvaged from other elevations of the building. While some of the windows on the other sides are new, all are wood and share the original profiles.

A new entry of glass and steel

On the north facade, a new main entrance was inserted in what had originally been a solid brick wall. The new entry and a rectangular window above it are crisp modern designs of dark steel and glass. Old bricks taken from other parts of the building were used to fill in around the glass and steel, but the joint line between old and new was left for all to see.

A considerable amount of effort went into keeping Salt Lake Hardware looking as good as old. Because of uneven settling over the years, 48-inch-deep steel beams were inserted at a diagonal underneath the corners of the building to provide new support. And a major seismic retrofit was needed to bring the building up to code; this involved adding steel reinforcing bars to create a diaphragm that transfers loads to thick masonry walls and applying plastic-polymer webbing to the interior surface of brick walls as a method of bracing.

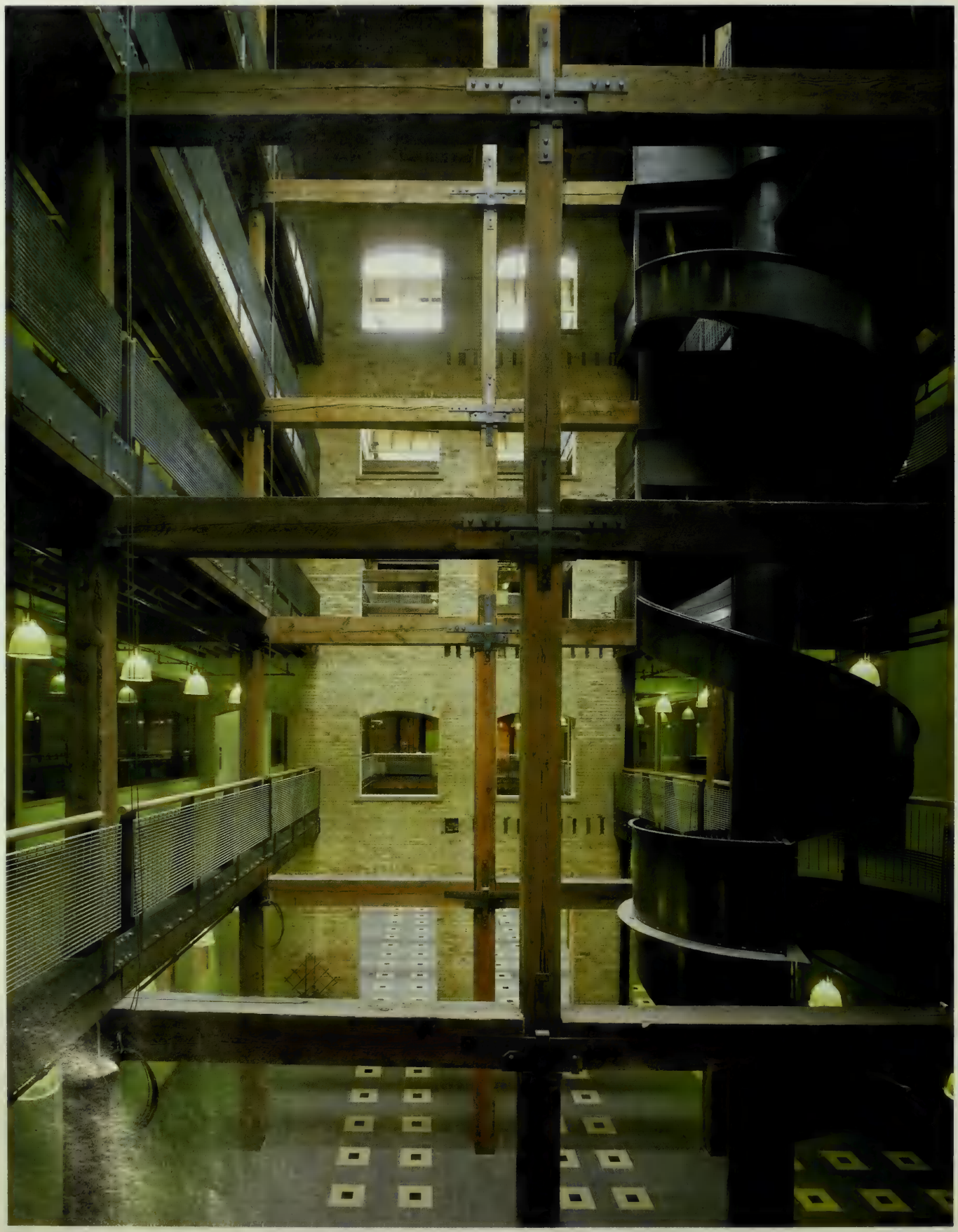
All the mechanical systems in the building are new. A chiller on the fifth floor provides cool air that comes down existing vertical shafts and is distributed horizontally through new exposed vents. Separate air-handling units service each of the eight zones of the building, allowing individual control. Three backup power generators are available, since several of the tenants





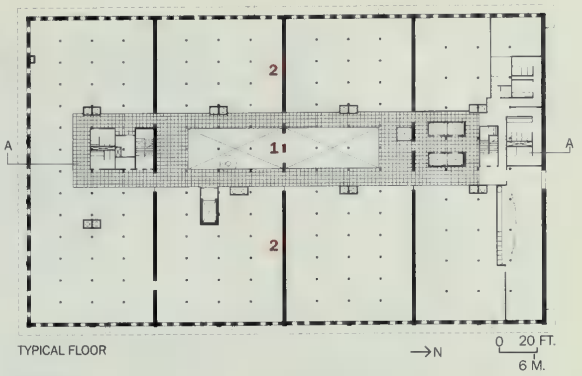
Located next to the railroad, the building (left) was once a regional distribution center. Today it anchors a warehouse district that's undergoing a revival. An old parts chute has been retained in the building's new atrium (foreground below).

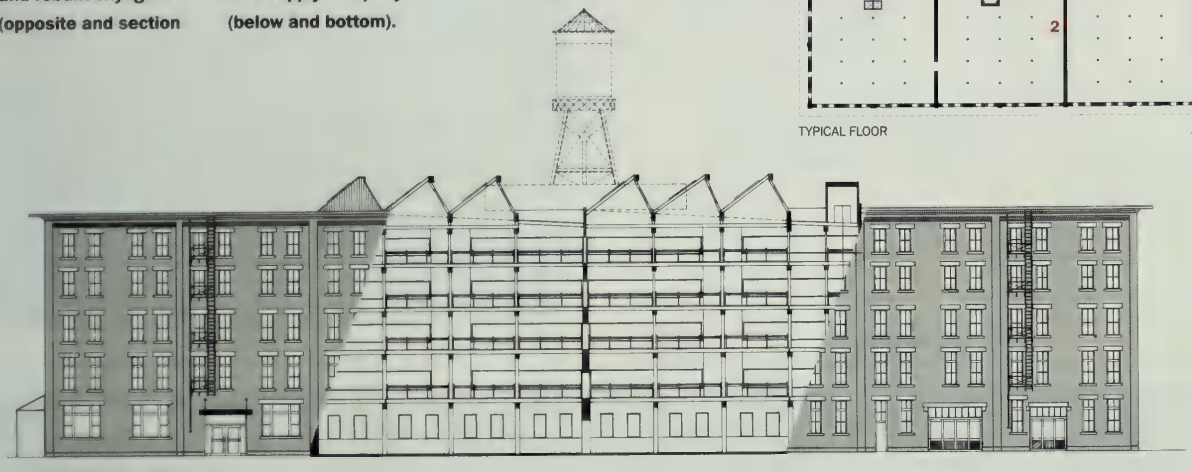




To bring daylight into the 50,000-square-foot floors, the architects inserted a five-story-high atrium into the center of the building and rebuilt skylights (opposite and section below). In the process, 2 million board feet of timbers were preserved. FFKR also designed showrooms and offices for a furniture supply company (below and bottom).

1. *Atrium*
2. *Offices*





EAST ELEVATION/SECTION A-A

have large computer-dependent operations.

On the inside, the architects preserved the impressive fir timbers that work as a structural frame for the building as well as the load-bearing fire walls, which are two feet thick at their base and divide the interior into four giant bays. But to bring more daylight into the 50,000-square-foot floors, Ulrich cut a 96-foot-long, 22-foot-wide atrium out of the center of the building and topped it with rebuilt skylights (made in part from timbers salvaged during the construction of the atrium).

Cutting new openings

In a building as heavy and enclosed as this one, "a sense of transparency is needed," says Ulrich. So the architect cut arched openings into the masonry wall dividing the atrium in half, allowing views and light to run through most of the interior. The shallow arches were modeled on ones found in another part of the building, so they seem to be a natural fit.

The major circulation route wraps around the atrium, providing a great deal of flexibility in subdividing office space on each floor. To maintain an industrial feeling in the interior and stay within a tight $10 million budget, Ulrich searched hard for the right railings and balusters to overlook the atrium. His solution was to stand industrial steel floor grates on their sides. Another intriguing decision was to keep in place the spiraling metal hardware-delivery chute. Today the chute serves as a sculptural element, rising up through the atrium and recalling the building's previous function.

In addition to all the public spaces, FFKR designed the interiors for a furniture showroom on the ground floor. The architects exposed the building's brick walls, restored the original pressed-tin ceiling, and inserted some gently curving walls to enclose a few freestanding rooms. ■

Sources

Wood windows: *Pozzi*
Insulated-glass skylights: *Aladdin Industries*
Hickory-trim woodwork and framing: *Boswell-Olsen*
Atrium floor tiles: *American Olean*
Surface-mounted downlights: *ESCO*
Custom metal guardrails and reception desk: *Elwood/Sieg Design*





3 James N. Gray Company Lexington, Kentucky

A DESIGN-BUILD COMPANY SAVES A BELOVED MODERNIST DEPARTMENT STORE BY CONVERTING IT INTO THEIR OWN HOME OFFICE.

by Lisa Germany

Project: *James N. Gray Company Home Office, Lexington, Kentucky*
Architect: *Franklin N. Gray Design Services—Sharon Blandford, AIA, John Thorne, AIA, Stephanie Gilbert, design team*
Architect of Record: *Lucas/Schwering Architects*
Associate Architect: *Pentagram Architectural Services*
Interior Designer: *Carol Carol & Company Interior Designers*
Engineers: *Freeland Harris Consulting Engineers (structural); Technical Horizons (mechanical); Engineering Resources, Inc. (electrical, lighting)*
Landscape Designer: *John L. Carman & Associates*
Design-Builder: *James N. Gray Company—Stephen Gray, project manager; Doug Aebersold, site manager*

Adaptive use: *Department store to offices for design-build company*
Size: *74,000 square feet; four stories, plus basement*
Construction cost: *$5 million*

On May 25, 1995, in the suburbs of Lexington, Kentucky, more than 150 people broke ground at the site of the new home office of the James N. Gray Company, a growing design-build company. The sunny day was full of speeches and tributes to employees from the Gray family. So bright were the expectations for the facility that no one could have guessed that within a month the company would scrap it in favor of a downtown building vacated by a department store.

The Wolf Wile Department Store, on East Main Street, had been a beloved icon in Lexington and the city's Modernist gem. But like many grand department stores in downtowns around the country, it had closed its doors in the 1990s and the building was up for sale. Civic leaders concerned about a downtown losing its vitality tried to interest several companies in the Wolf Wile store. Unfortunately, it presented the Grays with some of the same shortcomings as their existing offices—four separate floors and not enough parking. Besides, at $2 million, it was too expensive to buy and remodel.

Enter David Mohney, the dean of the University of Kentucky School of Architecture, who says he "nudged" Franklin Gray, son of the company's founder, to think again about the store even after breaking ground for the suburban building. Mohney felt keeping the firm downtown would provide the city with a shot in the arm, so he asked the mayor to help work out a deal.

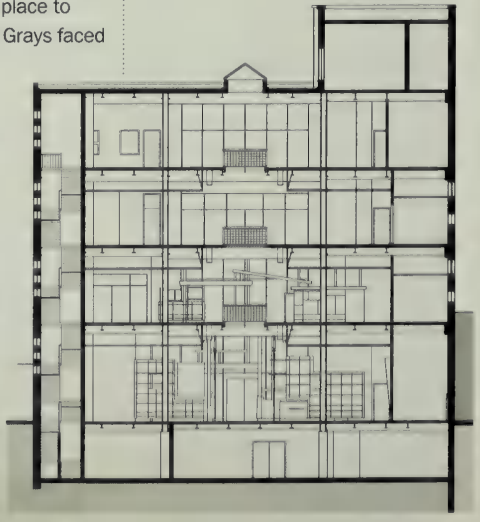
He also enlisted a friend, former University of Kentucky dean (and Gray Company consultant) Charles Graves, to talk to owner Joseph Wile about reducing the price of the store. Their efforts paid off when the city made parking available and Wile lowered his price to $550,000.

Designed for Wile by New York architect James Pickering (in association with the local firm Frankel and Curtis), the 1950 International Style building was an elegant place to shop. The challenge the Grays faced was how to convert the store to a very different function without compromising its unique personality.

Preserving an old front

Respecting the store's role as a presence on East Main Street, the Grays cleaned and restored its front facade of recessed-glass display windows surmounted by three levels of square granite panels and kept the stainless-steel columns and limestone pylon bearing the Wolf Wile name. The restoration of the front and the eastern face of the building qualified the structure for a spot on the National Register of Historic Places and a 20 percent historic buildings tax credit.

The restored department-store

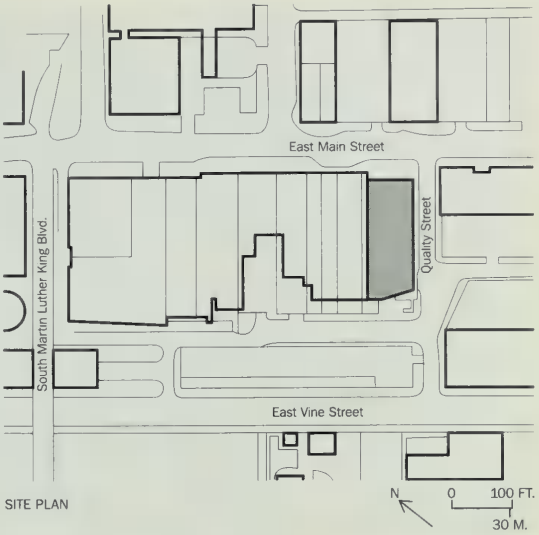


A cross section of the Gray Company building shows the skylight and light wells cut through the old structure. The light wells help define a "Main Street" of meeting places running through the middle of each floor.

Lisa Germany is the author of Harwell Hamilton Harris, *a biography of the early Modern architect.*



The Main Street front of the Wolf Wile store was restored (left) and a new entry for Gray was created with painted I-beams "completing" the sliced-off end of the building's envelope (below).



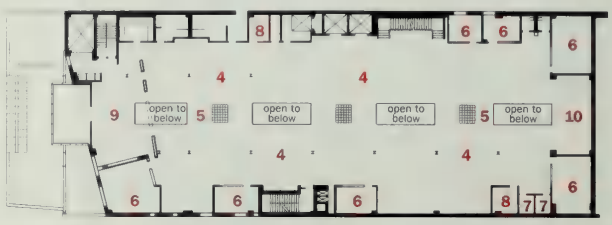
SITE PLAN



1. *Entry court*
2. *Reception*
3. *Greeting room*
4. *Office*
5. *"Main Street"*
6. *Conference*
7. *Quiet room*
8. *Support*
9. *Coffee shop*
10. *Library*



FIRST FLOOR



SECOND FLOOR





The open interiors provide plenty of places for Gray employees to meet and relax. The "Main Street" area under the 100-foot-long central skylight is furnished with work tables and comfortable chairs (right). A curving stair from the original store has been incorporated into the new facility (opposite top right). Timber and untreated materials used in the interiors refer to the company's business: construction (opposite bottom).





front, though, wasn't convenient to parking and offered little chance for Gray to project its own identity. So the back of the building became the main entrance for Gray Company employees and clients. The building's new orientation has also added architectural interest to Vine Street, a road motorists once used only for speeding across town.

The new facade takes its cue from the angular cutaway of the store's backside, which keeps the building from being the Modernist box it otherwise would be. "You immediately wanted to complete the grid," says Franklin Gray of the old store's angled rear elevation. In effect, that's what the designers did when they added colorful I-beams, braced by a catwalk off the fourth floor, to the Water and Vine Street facade. The composition frankly communicates the business that goes on inside: construction.

The designers of the new Gray home office let the old building lead the way. "It is so clean and so forceful that it was easy to give it form," says Franklin Gray, who collaborated on the building with his own staff at the Gray Company and, until there was a parting of the ways, with Jim Biber of New York's Pentagram Architectural Services. To introduce natural light into more of the structure, an expansive 100-foot-long by 8-foot-wide skylight was cut into the roof. Beneath it, four cutouts on each floor distribute daylight and serve as unifying central elements. (The cutouts are staggered vertically, so they don't line up.) On each floor, the space below the skylight is called Main Street, an area where employees can meet colleagues and relax.

Open office areas allow people to work in teams and encourage flexibility when new teams are formed. Executives work in the same open areas and meet clients in conference rooms. Small "quiet rooms" provide privacy when needed.

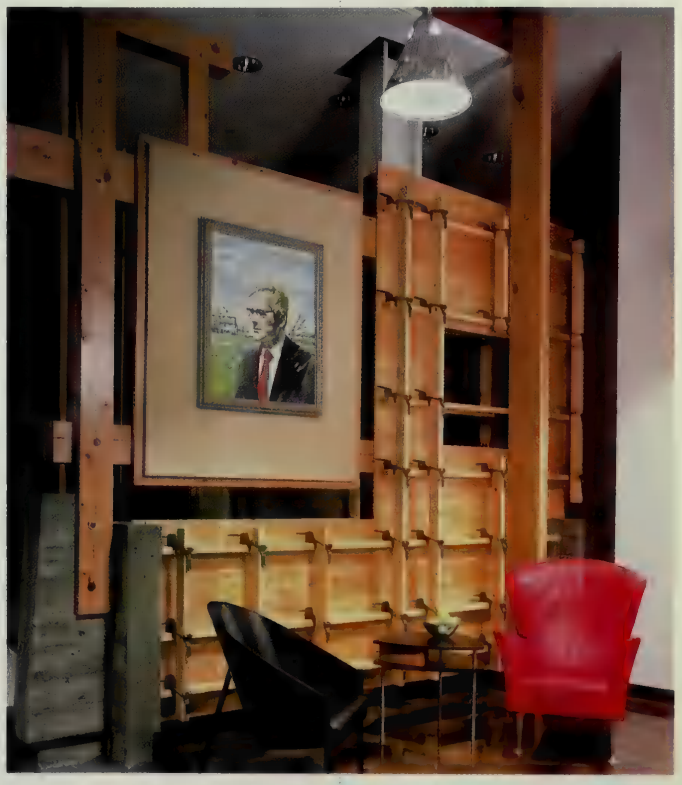
Designing for collaboration

The Grays credit Biber with understanding their desire to use the building as a way of expressing their philosophy of collaborative work, helping them create a structure that establishes the corporation's particular brand identity. They were also inspired when he created what he called a precedence book, which illustrated Classical prototypes (such as the Piazza Navona in Rome and the Uffizi in Florence) for the forms created by the building's light wells.

The interiors, designed by Carol Gullett of Carol Carol & Company of Lexington, are awash with strong color, which vibrates through the 74,000 square feet of floor space and down the various levels of the building.

Except for the meeting rooms that line the perimeter of every floor, the interiors have an organic flow, intended—as so many other features of the building are—to bring people together.

The Grays are happy to have invested the same amount of money in converting the Wolf Wile store—$5 million—that they had planned to spend on building a new headquarters and to have ended up with 80 percent more space. ■



Sources

Curtain wall: *Kawneer*
Continuous-ridge skylights: *Naturalite, EPI*
Acoustical ceilings: *USG*
Cabinetwork: *Prajna, Lexington Laminates*
Carpeting: *Collins & Aikman, Eurotex*
Office furniture: *Herman Miller (Relay Group)*
Upholstery: *Kravet; Knoll, Stroheim & Rhomann*

4 Admission House Vassar College Poughkeepsie, New York

RESTORING SOME OF THE ORIGINAL ARCHITECTS' IDEAS AND INJECTING SOME OF HER OWN, LINDA YOWELL GIVES NEW LIFE TO A 1908 BUILDING.

by Clifford Pearson

Project: *Carol and James Kautz Admission House, Vassar College, Poughkeepsie, New York*
Architect: *Linda M. Yowell, Architect—Linda Yowell, AIA, principal-in-charge; Joaquin Ham, Nick Raschella, AIA, Alfred Wen, Anne Derry Whidden, project team*
Engineers: *Robert Silman Associates (structural); Atkinson Koven Feinberg Engineers (mechanical/electrical)*
Consultants: *Judith Stockman (furniture specification); Sasaki Associates (landscape design)*
General Contractor: *Kirschhoff Construction*

Adaptive use: *Clubhouse to admissions office*
Size: *5,000 square feet, including 800-square-foot addition*
Construction cost: *withheld*

If you didn't know the building before it was converted to Vassar's Admission House, you would think it had always been this way. Built in 1908 as a clubhouse for maids who worked at the college, then used as offices for the employees' union, this Arts and Crafts structure has now assumed its third identity. Although she redesigned nearly all the interiors and made changes to the exterior, architect Linda Yowell, AIA, was able to capture the spirit of the original architecture.

The new admissions building is the last piece of a program started by Vassar president Frances Fergusson to convert old service buildings in the area behind the school's Main Building. Earlier projects included turning a power plant and a coal bin into two theaters. Fergusson, who is an architectural historian, is continuing to build on campus and has commissioned Hugh Hardy to design a library addition.

Before working on the Carol and James Kautz Admission House, Yowell (a Vassar graduate herself) checked the drawings of the original building by Pilcher and Tachau. She discovered that a series of ceramic tiles specified for the upper portion of the main elevation had never been installed and that a set of cascading front stairs had actually been built as a straight set. So Yowell incorporated the original architects' ideas into her design, while repairing the building's cracked stucco and wooden eaves and rebuilding the front porch to accommodate a new wheelchair-accessible ramp. To make the new ramp compatible with the Arts and Crafts building, Yowell detailed its railing to match the old porch railing. She also raised the level of the front yard by a foot to reduce the length of the ramp.

On the back of the building, the architect added an 800-square-foot, two-story addition, necessary for the building's new function. By keeping the addition's roof low, Yowell ensured that it didn't obscure the upper band of small windows on the top floor of the existing building.

Reworking the interiors

Because the needs of the admissions department differ from those of a clubhouse, most of the building's interior spaces have been changed. The basement, which had housed a laundry and boiler, now has offices. And the second floor has been redesigned so it can work as a series of offices around a combined conference and waiting room.

On the main floor, Yowell moved interior partitions to accommodate offices and a secretary's area. Meanwhile, the old lounge was totally refurbished to serve as the waiting room for prospective students and their families. Layers of aging white paint were stripped off the inglenook fireplace to reveal a set of Henry Mercer tiles the same size and shape as the tiles Yowell restored to the building's exterior. Slender wicker furniture was replaced by more solid and comfortable Stickley pieces.

While new interior partitions are gypsum board, the architect restored the old plaster perimeter



PHOTOGRAPHY: © JEFF GOLDBERG/ESTO





The building's porch (opposite) was rebuilt to include an accessible ramp (far left). Ceramic tiles like those envisioned by the original architects were added under the eaves (left). In the waiting room, paint was removed from wood brackets and the fireplace (below).





1. *Waiting*
2. *Secretary*
3. *Office*
4. *Conference/waiting*

The original stairs and plaster walls were restored (below left). Floor plans were totally reworked to accommodate new offices (below right) and waiting rooms on the first and second floors.





walls. "The feeling and sounds you get from plaster walls are completely different," says Yowell. "I wanted to keep that feeling."

For the Admission House project, Yowell tried to understand the intellectual world within which the original architects worked, not just the specific building in question. "I wanted to know what they were thinking and what other architects were doing at that time," explains Yowell. In so doing, she could then make decisions in the spirit of the old architecture, almost as if she were a turn-of-the-century architect herself.

For example, she added a stenciled border around the top of the walls in the reception room, which she adapted from student artwork on the cover of the 1905 Vassar yearbook. She also selected colors for the exterior of the building that were true to the work of Arts and Crafts architects such as Bernard Maybeck rather than limiting herself to what was on this building.

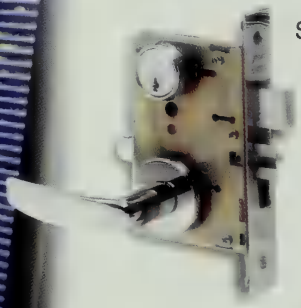
The building seems to be impressing prospective students and their parents, affecting their views of Vassar. In the first year after it was completed, admissions applications jumped 18 percent. ■

Sources
Exterior pottery tiles: *Pewabic Pottery*
Fiberglass shingles: *GAF*
Wood windows: *The Woodstone Co.*
Area rugs in waiting room: *Stark Carpet*
Reception furniture: *Stickley (Audi)*
Chandelier: *Brass Light Gallery*

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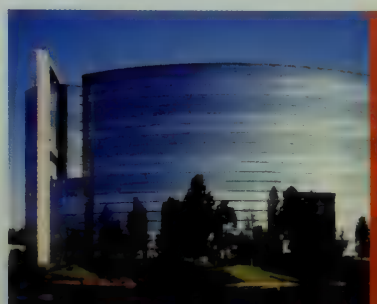
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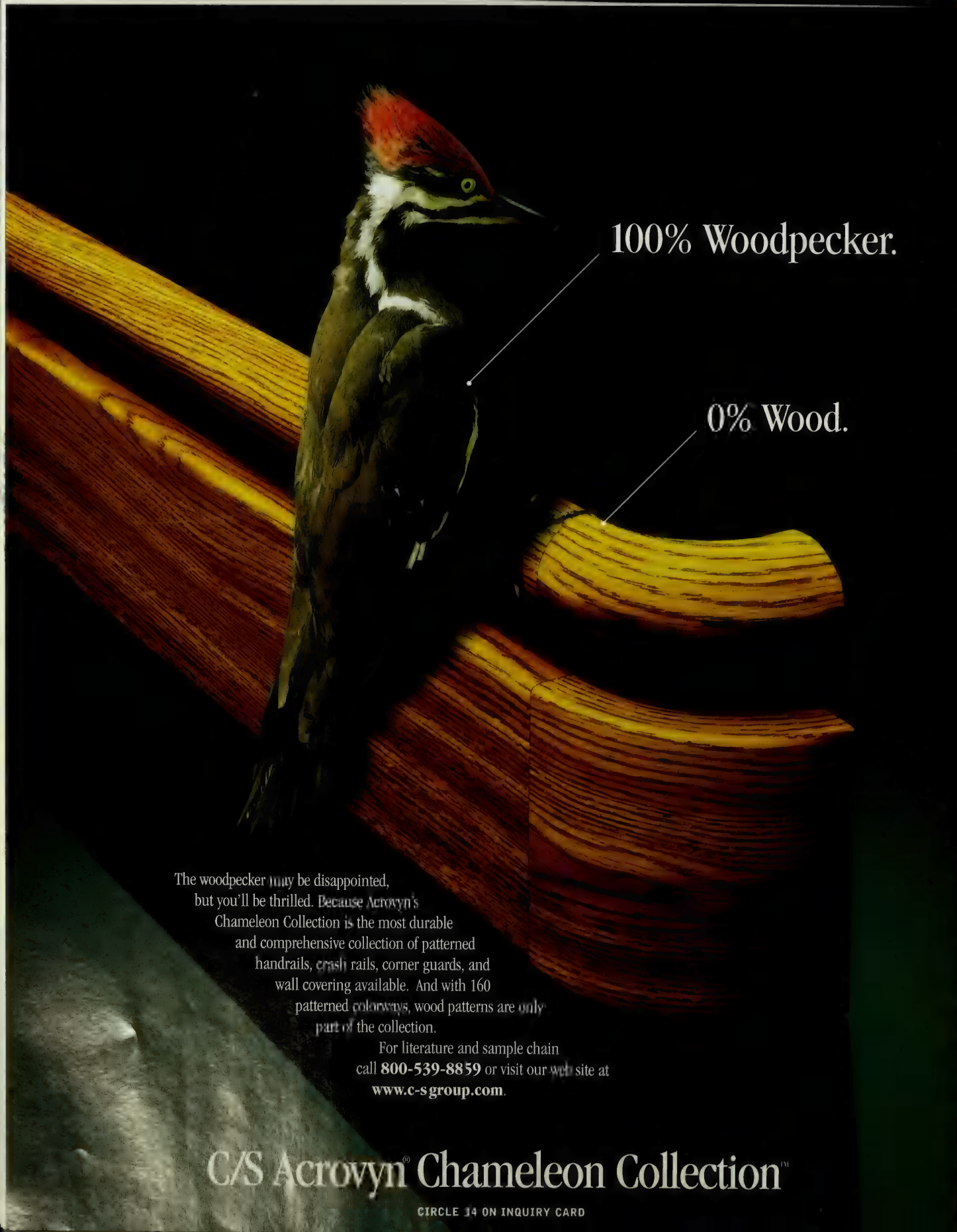
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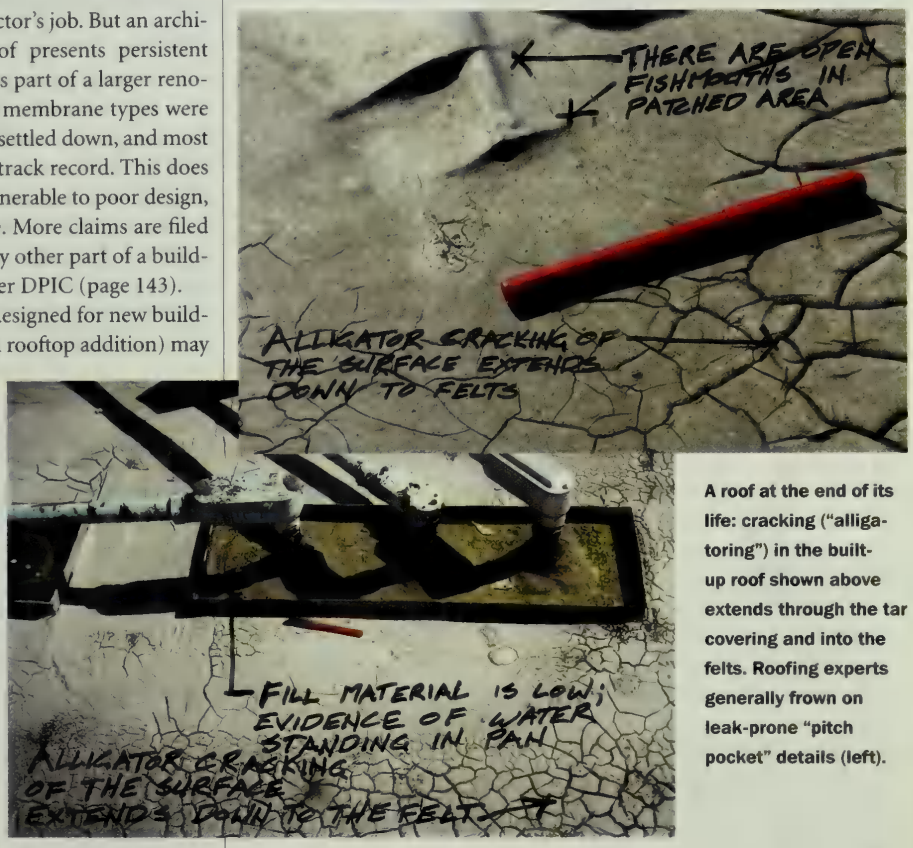
Lowering the Risks of Reroofing

SUCCESS IN REDOING ROOFS OFTEN MEANS CONTENDING WITH RUSTING FANS, ABANDONED CONDUITS, CLOGGED DRAINS, AND MISTAKES MADE BY OTHERS.

by Barbara A. Nadel, AIA

Much of the time, reroofing is a contractor's job. But an architect may be called in when a roof presents persistent problems or when reroofing becomes part of a larger renovation project. After a flurry of new membrane types were introduced in the 1980s, technological change has settled down, and most roofing technologies in common use now have a track record. This does not mean roofs are problem-free. They remain vulnerable to poor design, poor installation practice, and poor maintenance. More claims are filed each year regarding roof and wall systems than any other part of a building, according to a recent survey by liability insurer DPIC (page 143).

Retrofit roofs are not the same as roofs designed for new buildings. Undocumented existing conditions (such as a rooftop addition) may have been in place for a while and may be contributing to deterioration. Unforeseen environmental factors (perhaps grease from an added fan) and lack of maintenance may also shorten roof life.



A roof at the end of its life: cracking ("alligatoring") in the built-up roof shown above extends through the tar covering and into the felts. Roofing experts generally frown on leak-prone "pitch pocket" details (left).

Why did the old roof fail?

Most of the time, however, an architect is called in when the old roof leaks. A split or hole in the membrane may be an obvious cause, but for many roofs, finding the source of leakage is a tricky yet essential step toward getting the designed performance out of the new roof.

When faced with a roofing retrofit project, the two most important reroofing questions an architect should ask are why the original roof failed and why the building leaked. "Roofing professionals recognize that most failures occur at penetrations, substrate and material transitions, base flashings, and termination details," says Ken Bensimon, AIA, principal of KMB Architects in Olympia, Washington. "Incompatible materials may cause a reaction adversely affecting waterproof capabilities," he continues, such as a metal flashing to which a thermoplastic membrane won't adhere. He also explains that roofing commonly fails where penetrations are not detailed to account for building movement. A building may expand and contract or even permanently "grow" due to changing temperatures and positive air pressure.

Jan Kalas, AIA, an associate at LZA Technology in New York City, frequently examines defective roofing systems for the forensic-investigations arm of LZA, a large engineering firm, to determine whether to restore, repair, or replace them. An existing-conditions assessment

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education series focuses on the problem-laden area of reroofing. After reading the article, complete the questions (page 246) and check your answers (page 248). AIA members may fill out the self-report form (page 248) and send it in for two AIA Learning Units. —Mark Scher, AIA Director Professional Education Products and Services*

Learning Objectives

After reading this article, you will be able to:

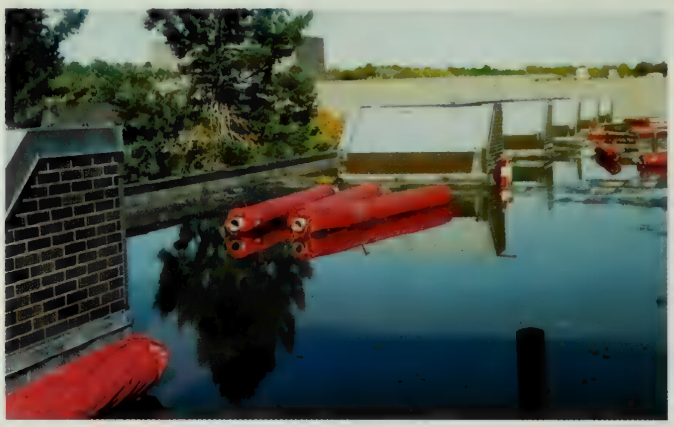
1. *Identify at least 15 factors in structure analysis, owner requirements, and building use to consider in programming, designing, and specifying reroofing projects.*

2. *Cite authoritative sources and references for roofing information and research.*

3. *Write specification solutions for environmental problems that affect roofs and offer detailing/specification tips to avoid preinstallation communication problems.*

Barbara A. Nadel, AIA, is principal of Barbara Nadel Architect in New York City, specializing in health, correctional, and institutional planning and design. She is New York State Regional Director on the national AIA Board of Directors.





Pipe penetrations at curbs (left) are a reroofer's nightmare, only made worse by the wiring. An independent roof inspector can call attention to such contrary-to-specs conditions as new roof materials stored where they can get wet (right).

should not only evaluate the condition of the membrane but also identify any trapped wet materials and the source of leaks. Signs to look for include blistering and delamination of the roofing membrane, leaks, moisture and stains in spaces below the roof (such as on ceiling tiles), rips and holes in roofing or flashing, ponding water, and moss or other plant growth. If a spongy, uneven surface or water bubbling out of the membrane is encountered while walking on the roof, more detailed analysis is needed.

"Roofing is only as good as what's underneath it—the deck, substrate, and attachments between the roofing and the structural system," says Kalas. "Roofing leaks can damage the substrate and structure. Moisture infiltration can lead to indoor air quality problems caused by mold, bacteria, stagnant air, and standing water."

Kalas usually follows visual observation with testing. Nondestructive testing includes infrared photography or nuclear scanning for moisture content. If such testing or observation suggests that roofing or substrate materials are wet, destructive testing may be needed. Destructive testing requires cutting into the roof and taking a piece out for analysis. This core sampling indicates the condition of the roofing, insulation, and subsurface deck.

For example, if a roof with a steel deck, perlite insulation, and a membrane over it has leaked and the insulation is wet, the insulation must be removed. This is critical because the deck will continue to rust, the metal fasteners for the replacement roof will corrode, and the new membrane will probably blister. The roof may not rest on a firm substrate, making it subject to premature wear or puncture.

One of the key decisions the designer must make is whether a new roof can be applied over the old roof or whether conditions warrant a "tear-off." The structural condition of the underlying roof deck to a great extent determines the answer, says Jack Robinson, the technical services deputy director of the National Roofing Contractors Association in Rosemont, Illinois. New roofs add weight that might not have been anticipated in design, for example. "Inspect the underside of the roof deck to see if the existing structure is damaged," says Robinson. "Look for signs of rust in steel decks, rot in wood, or spalling in concrete. If there is damage, you need to repair or replace the decking first, which can mean a tear-off rather than a re-cover." He also advises making sure no conduit runs above or below the roof deck in channels to avoid penetrating the conduit with new roofing fasteners.

A reroofing may involve improving earlier, unfortunate design decisions. When dealing with retrofits, says Kevin Cash, associate at Simpson Gumpertz & Heger, Inc., in Arlington, Massachusetts, a consulting firm that specializes in building-envelope design, check the existing roof-drain system, especially in buildings more than 15 years old that may not have been sized to modern standards. If the existing system and roof drains are undersize, it may be necessary to substantially upgrade or replace the entire drainage system to current codes. In such instances, coordination with local building officials may be required. Drains may also have been placed too close to walls and parapets, where water can be trapped or where there is insufficient space for the roofer to flash them properly.

"Skylights are often placed over the interior construction and not where the roof wants them," Cash explains. Skylights and other interruptions in roof slope require crickets on the up-slope side to divert runoff. An older building may have accumulated a junkyard of conduits, pipes, and mechanical equipment, all of which can cause leaks and make reroofing nightmarish. Part of the reroofing analysis includes considering which of these items can be removed or relocated.

Recently, roof-mounted antennae for cellular phones have proliferated. Although cellular antennae are said to generate harmful microwaves and extensive exposure may pose a health risk, more owners are adding them to roofs and facades because they generate income. "These antennae must be placed at a roof high point, where water is unlikely to collect, not at a low point, where water will inevitably find its way into the building," cautions Peter Blaufeux, AIA, principal of Peter Blaufeux AIA Architects in New York City, who specializes in building exteriors and institutional work. Installing any rooftop items after roof completion and inspection may also void a warranty.

TOO MANY OWNERS GO ON THE ROOF ONLY WHEN A PROBLEM ARISES, BUT PREVENTIVE MAINTENANCE IS THE KEY TO ROOFING LONGEVITY.

The National Roofing Contractors Association (NRCA) offers a great deal of guidance on various commercial roofing systems (the association can be reached at 847/299-9070). The NRCA fields more than 4,000 calls annually from architects, engineers, attorneys, contractors, and homeowners asking for roofing advice and contractor referrals. It publishes a roofing manual, roofing-material guides, and the *Handbook of Accepted Roofing Knowledge (HARK)*. The NRCA also publishes more than 300 detail drawings on low-slope roofing on CD-ROM and for CAD systems, and maintains Project Pinpoint, a program identifying roofing problems and solutions using new technology.

Selecting a reroofing system

Kalas decides on a reroofing approach by balancing installation and life-cycle costs, energy-conservation performance, and the degree of protection the owner wants to maintain. He develops strategies with options for roofing systems and cost estimates for each alternative.

When choosing roofing systems, architects should consider the building use and the client's financial circumstances. [See "Simplifying Single-Ply Roofs," RECORD, February 1995, pages 38–29, for an overview of standard roofing types.] Developers generally want low first cost, even if maintenance levels may be higher or replacement will loom sooner. Institutional clients can often pay incrementally more for a roof if there is a return in longevity and lower maintenance. (Metal-roofing manufacturers have successfully made a low-maintenance case for retrofitting metal roofs on a sloped purlin system over older roof systems with nearly flat built-up or single-ply roofs.) Many large owners choose a roof system because it has a proven track record for them and because it is easier to maintain a great number of buildings that have the same roof.

A competent roof designer will design a system suited to environmental and site-specific conditions—such as rooftop exposure to chemicals, falling debris, interior exposure to fumes, extreme winds, or a marine climate—and will evaluate potential or existing roof problems that may go beyond the scope of roofing itself. These might include structural modifications, thermal-insulation improvements, improved thermal-movement or seismic-movement control, and better handling of roof or attic ventilation, as well as upgrades to bring the structure up to code and design to reduce needed maintenance.

Building use also affects roof selection. "Buildings housing electronics, computers, and telephone equipment are highly susceptible to water damage," advises Roland Frerking, AIA, vice president at HNTB Corp. Facilities Consulting in Kansas City, Missouri, who specializes in roofing design. In such cases, the roof must offer absolute protection. A less expensive, low-maintenance roof might be fine for a warehouse storing farm implements, however.

Some building types present unexpected issues. Dormitory roofs covered in synthetic-rubber membranes can suffer deterioration due to kitchen-exhaust grease or oils used by sunbathing students. Buildings under an airport landing path may be subjected to soot and exhaust fumes that can interact chemically with some membrane types. Loose-laid membrane systems and poorly detailed metal roofs have proven particularly susceptible to gales, and slates or tiles torn off in high winds have become dangerous projectiles. In waterfront areas, seagulls may be attracted to polyurethane-foam roofing and have been known to peck at and build nests on sprayed-urethane decks. Preventive coatings are available.

Many products appear on the market for new and retrofit applications. Using new technology can pose a risk, because problematic field conditions may not appear immediately. "A roof is no place to experiment," advises Blaufeux. "I'll wait for the glitches to be worked out. I want a proven track record."

Design and detailing issues

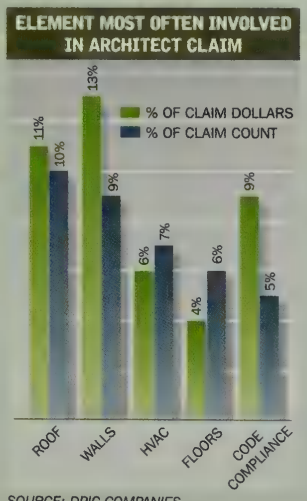
Reroofings should be designed, not merely specified, Bensimon asserts. "A roofing contractor may recommend a system they are authorized to install, rather than one that may be more cost-efficient, such as a system with the proper material and wind-uplift requirements," he says. Details are a sore point for many contractors, NRCA's Robinson says. "Most contractors see drawings that are inadequately detailed and contain too many 'RFOs' (roofer figure out) and such blanket responsibility-shifting phrases as 'Shall conform to the recommendations of the NRCA Roofing and Waterproofing Manual.'" The manual is 1,900 pages, Robinson explains. "Can't they narrow it down to one chapter?"

"It's refreshing to get a call from an architect asking about a detail for an expansion joint running into a wall. That's a classic RFO," Robinson adds. "Architects basically tell contractors, 'Don't do it right' or 'Do it over at your cost.' We'll comment and mark up an architect's sketch and provide related information."

"Manufacturers' details are good but generic," LZA's Kalas adds. "Standard details should be made project-specific. Roofing design errors also occur when the designer fails to understand the roof as an entire system consisting of membrane, flashing and terminations, insulation, vapor barrier (if needed), decking, and the roof-support structure."

Contractor selection

Since improper installations are much more common than material failures, the selection of the roofing installer is a critical decision. The contractor's roofing experience should be verified and the company should be a member of the NRCA. "The NRCA list is a good place to start," says Simpson Gumpertz & Heger's Cash. He also advises, "Choose roofers from among those certified by the roofing manufacturer for installation, not just the ones who buy the materials." As you narrow the list, ask for references and check them, says Cash, and check the roofer's financial state (its Dun & Bradstreet rating) and its safety programs. Then call the contractor and make sure they can handle your specific installation. "Ask who their best competitors are," says Cash. "Put them on the bid list." Cash continues, "It's good to know a contractor's specialty. Certain roofing systems are more common in some parts of the country and will be more competitively priced by the contractor."



SOURCE: DPIC COMPANIES

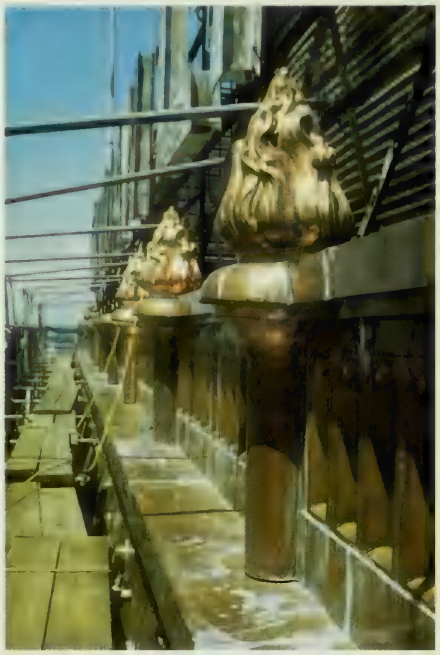
ROOFS ARE HIGHEST LIABILITY RISK

Roofs are both exposed and relatively fragile building technologies. It's not surprising, then, that "most insurers won't touch roofers," says Arlene Petty, of Petty Burton Maloney Associates in Rochelle Park, New Jersey, whose firm insures design professionals. In late 1997 her office had three pending roofing claims relating to worker injuries.

A recent study by the DPIC Companies, an insurance carrier based in Monterey, California, found roofs to be the element most often involved in architects' claims. Ten percent of the 3,700 closed architectural claims between 1989 and 1995 involved roof problems (see chart). Claims most often concerned venting, flashing, and gutters (cited in 50 percent of claims), though installation—not detailing—was the major culprit.

Inadequate field observation, material degradation, and use of new, unproven materials and technology were also frequently cited.

Design errors figured in 21 percent of claims. Half of these were due to a consultant's error and a third were due to inadequate documentation. *B.A.N.*





Reroofing a historic structure may call for laying old technology (copper) over new (an elastomeric membrane), as at the 1907 Guardian Life Insurance Company Building, New York City (left). Michael Devonshire, conservator at Jan Hird Pokorny Associates, the architect, also oversaw remolding of historical terra-cotta trim.

Solving problems before construction

Blaufeux is among those who stress the value of a preconstruction conference. "Drawings are no guarantee you'll get what you designed," he explains. Meeting attendees should include at least representatives from the owner, architect, roofing contractor, and roofing-system manufacturer. Other affected subcontractors or consultants (environmental and structural, for example) should be included. The meeting gives parties a chance to resolve questions about documents and existing conditions rather than having to solve them on the roof while bitumen kettles are bubbling, rain is threatening, or seams are curing.

Because quality control and workmanship are so important to modern roof systems, Frerking recommends that his clients retain an on-site observer during roofing installation. It's an expense many clients don't want to bear and an inconvenience for contractors, but the consequences of premature roof failure may be worse. Manufacturers are supposed to inspect the work of their certified installers before signing off on a warranty, but Blaufeux contends that the inspection often doesn't occur until the installation is completed, when it is too late.

WET MATERIALS FOUND IN AN EXISTING ROOF ASSESSMENT MUST BE REMOVED, OR FASTENERS MAY RUST AND THE NEW ROOF BLISTER.

Assuring installation quality

Much can go wrong with a roofing installation, and experts identify some common problem areas.

Existing conditions. Before new materials go on, it is important to inspect areas that will be hidden when roofing is complete, says Blaufeux. "Architects should discuss the possibilities with their clients in advance of construction. Let them know that some conditions needing further attention can't be determined in advance, such as clogged drains."

Materials storage. "A wet blanket doesn't insulate very well," Blaufeux observes. "Roofing materials must be stored dry."

Timing and crew changes. How the partially completed roof is protected at the end of the day or when a sudden storm threatens is key to performance. Protection not only has to enclose the new material, it has to keep water out of the exposed or unrepaired old roof. A crew change can result in a lapse of quality control, Frerking says, if the contractor is not paying close attention or a designer or inspector is not present.

Craftsmanship. Single-ply roofing materials, including EPDM, PVC and PVC blends, CSPE, and TPO, depend on essentially perfect field seams, which are lapped and glued or solvent-welded. The multiple plies of built-up roofs offer some redundancy if craftsmanship is not up to par.

An independent inspector is most important in observing the installation of materials and components that will ultimately be hidden, such as insulation, flashing, or vapor barriers. Inspectors may not be empowered to stop the work (it's a job often outsourced to an experienced third party), but they can put the roofer and general contractor on notice that apparently nonconforming procedures may compromise the roof, and get the designer and roofer together in a timely way to resolve unexpected problems. Observers pay for themselves when they help prevent the roofer from removing improper work and doing it over again. Cash has developed an extensive checklist, used for training, with more than 24 items and reminders for roofing installation and quality control.

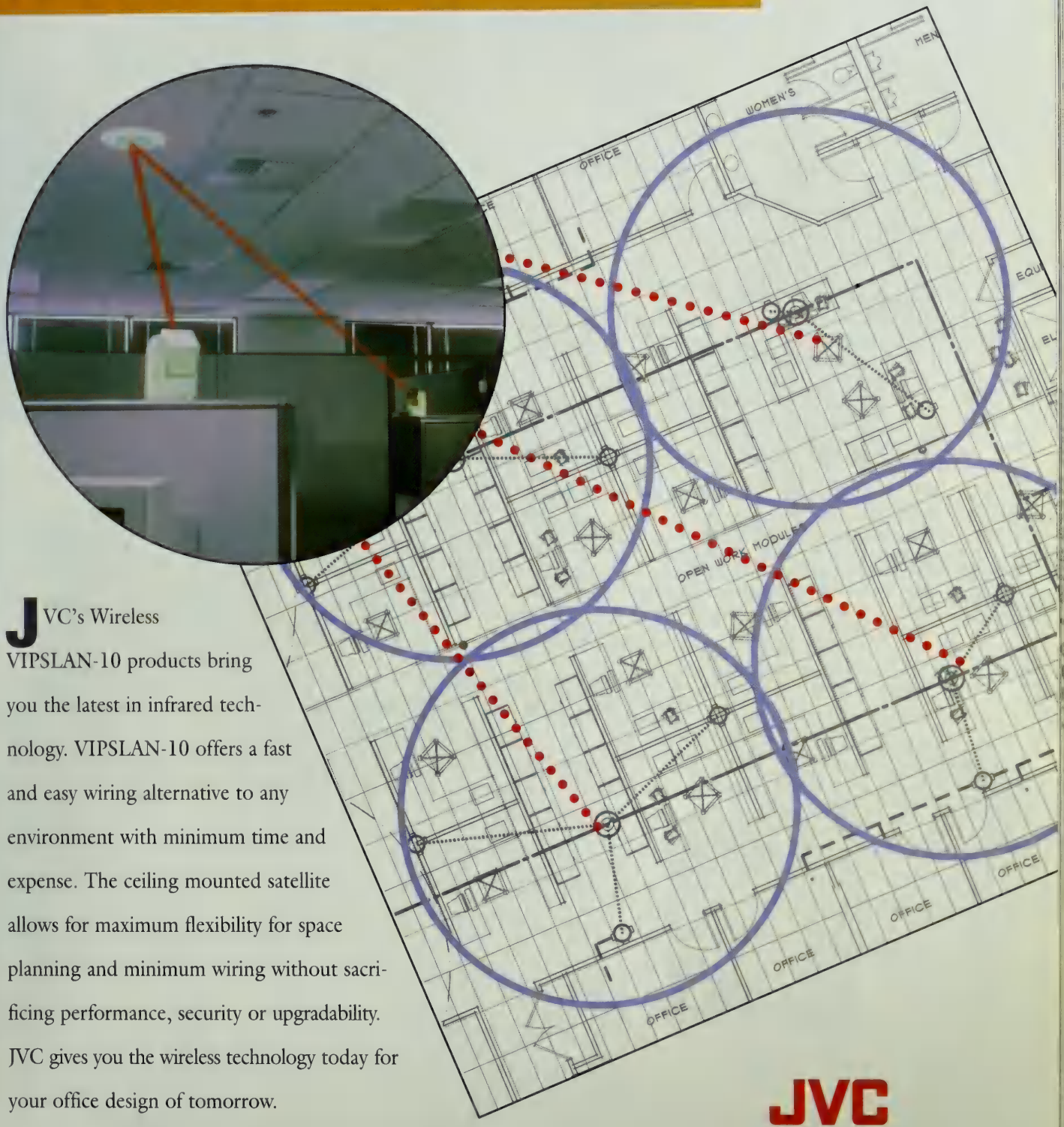
Blaufeux recommends requiring the roofing contractor to inspect the roof twice under the one-year guarantee usually called for in general-construction contracts and to issue a written report documenting observed conditions. The architect should inspect the roof a few months prior to expiration of the contractor's agreement to determine if any defective work needs to be corrected under the guarantee. Documentation should include written records and dated photos of flashing, seams, and other key areas.

Are warranties worth it?

As manufacturers have offered longer and longer warranties, owners have come to think of them as taking care of any *(continued on page 250)*

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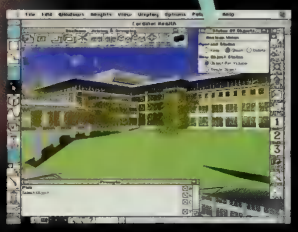
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CIRCLE 37 ON INQUIRY CARD

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Taking Care of Business

DOES YOUR BILLING AND PAYROLL SYSTEM MESH WITH OTHER PARTS OF THE BUSINESS TO HELP YOU MANAGE, MARKET, AND FINE-TUNE PROJECTS?

by Steven S. Ross

There's more to bookkeeping than keeping the books. What if you could arrange your payables and payroll expenses by project and could match them against receivables to determine which projects make a profit and which ones are marginal? What if the software itself could help guard against error and fraud by keeping a careful history of bills, hours worked, and payments received?

That kind of capability is widely available now. It's just one step up from commonly used software such as Intuit's QuickBooks or Sage's DacEasy. Now, thanks to powerful software that takes advantage of Windows 95 and Windows NT, standardization in database structures, and growth of the World Wide Web as a cheap network that can tie together diverse functions in diverse locations, a new set of capabilities is emerging: the ability to combine and analyze every piece of data about your operations, your personnel and affiliates' personnel, your clients, and the projects you work on. You may not want to computerize every aspect of your business right away, but you should be thinking about upgrades with such tasks in mind.

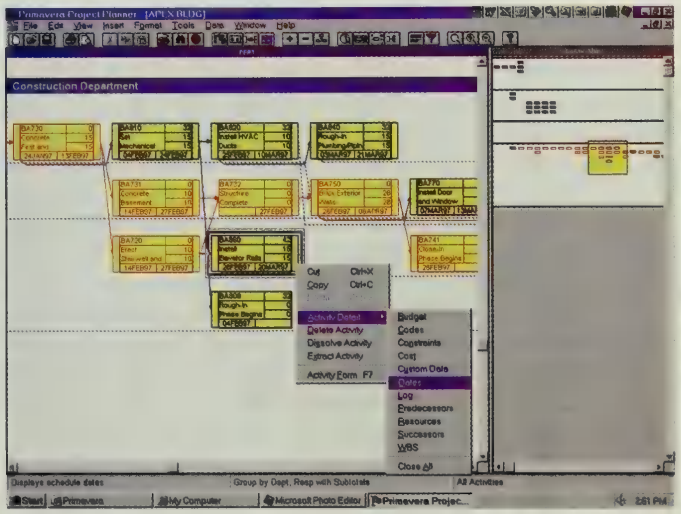
Many vendors are offering software to perform these tasks, and the merits of several programs are outlined here. Also discussed is Web-based networking, so that you can consider management software that can be used in networked environments in the future—a future that appears to be coming faster than most architects might believe.

Linking your data

Two years ago databases did not easily accommodate connectivity. Now the term to look for is Open Database Connectivity (ODBC). Most data produced by modern Windows software is ODBC compatible and thus easily linked together. If you think of data in terms of piles of information to draw from, yours might include the following:

ALL YOUR FIRM'S INFORMATION IN ONE DATABASE CAN HELP YOU DETECT CASH COWS AND CASH DRAINS.

Internal finances. Normal salaries, benefits, taxes, and overheads such as rent and utilities. To get a handle on these issues, you need an income (profit and loss) statement that is updated monthly or even weekly as you enter data. A balance sheet (balancing assets and liabilities) performs a different function. It is essentially a snapshot of your finances, taken every three to six months, or even annually. A balance sheet helps you track long-term changes in the worth of your enterprise. Most "general ledger" accounting packages can do the calculations for you.



P3's charting technique makes it easy to see how a project's activities are interrelated.

Human resources. An inventory of staff members, consultants, affiliated firms, and other personnel, all of which can be brought to bear on new projects.

Previous projects. The need to showcase your best work is obvious. But what about learning from mistakes, or making sure that special expertise rests with the firm and not with a specific individual? And what about putting the project database into a form that can easily be mined for promotional activities?

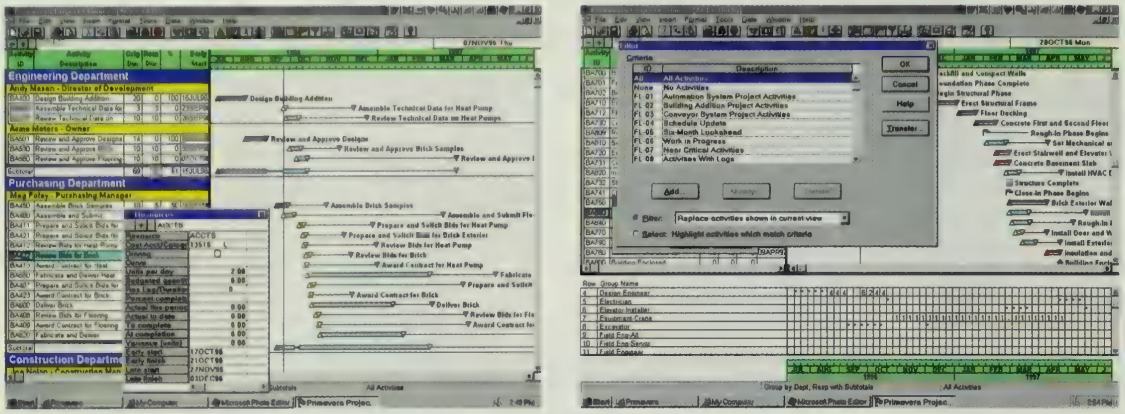
Knowledge base. Everything you need to produce a project—details, costs, code issues, and an expanding array of data ranging from geographical information systems to federal or state health regulations.

What's really new is that all of these piles can be combined into one large database to help you manage your firm's resources more effectively and detect areas that are particularly cost-effective or are cash drains. Almost all of the new class of management software requires Windows 95 or NT 4.0 or higher and plenty of disk space and RAM. Most vendors recommend 32 MB minimum for Windows NT and 16 MB for Windows 95, but it's a good idea to double both minimums for speed and reliability.

Handling your firm's finances

Bookkeeping software, of course, has been around for years. But over the past year or so, more and more inexpensive packages have been set up to run in conjunction with the Microsoft Small Business Server as well. This allows functions to be coordinated among different packages. The SBS

Steven S. Ross has been reviewing software and hardware for this magazine for more than 11 years. Unlike many other journalists, he has run a company (developing educational software) and met a payroll.



Primavera Project Planner provides a graphic view of a project's progress with a time line. You can view the entire project at once or highlight a particular area of interest.

operating system is Windows NT Server 4.0; computers connected to the network can run on Windows NT or Windows 95.

SBS includes Microsoft Exchange, Microsoft Outlook, and Internet Information Server (the current version is 3.0) for fairly easy Internet connectivity through the network rather than through individual modems. Microsoft Fax Server does the same for faxes; they go out and come in through the central server's connection to the outside world.

A database server can be accessed by almost any application designed for SBS. This allows a fairly easy pathway for systems administrators or consultants to combine diverse packages, financial and nonfinancial, in a reasonably error- and fraud-resistant way. The biggest limitation is that SBS is for companies with 25 connections or fewer; add-ons can be expensive. (Bigger firms, and those with needs that SBS would be hard-pressed to meet—such as Web publishing of drawings—should investigate Bentley Systems Engineering Back Office or another product, discussed below.)

DISTINCTIONS ARE KEY FOR SPECIFIC TASKS, BUT YOU NO LONGER HAVE TO COMPROMISE TO GET A GOOD PROGRAM AT A GOOD PRICE.

There are so many bookkeeping packages designed to run with SBS that it would be impossible to list them all here. But one of the most popular among architects has been Wind2. Semaphore has been popular among engineering firms, and this program seems to be gaining favor among architects as well.

The distinctions can be important for specific tasks, but the key point is that you no longer have to compromise to get a system at a good price. In the days of DOS software—each package with its own interface and quirks—you often picked software your data-entry staff or bookkeeper knew how to use, even if it wasn't ideal for your business. Now, all the Windows-based packages look quite similar and are easy to learn. So you can pick what's best, with little regard as to whether you can find someone to make it work. Simple stand-alone accounting packages such as QuickBooks and DacEasy can be purchased for a few hundred dollars. Moving up to a more comprehensive system can cost $1,000 to $10,000 or more, however.

Wind2, designed to work right out of the box, is a good example of what architects should be aiming for. It is divided into six modules. A System Manager module sets up basic company information such as employee lists. Business Management tracks employee time records, receipts, project expenses, and even employee evaluations. From expenses and receipts, it can calculate projected profits. There is also a General Ledger module for routine bookkeeping chores and an Accounts Payable module that distributes expenses and handles checks and 1099 forms. The Cash Management module and Payroll module base their calculations on the activities recorded in other modules.

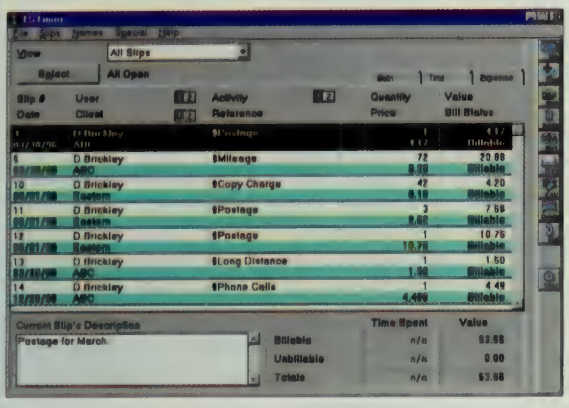
Crystal Reports, an industry-standard "report writer" program from Seagate Software, can tie together the data in the separate Wind2 modules and present it in ways useful to managers. It works with the databases in almost all Windows-compatible programs, but if you try to mix and match many software vendors' files, you will need a systems-savvy manager programming Crystal Reports to set things up for you.

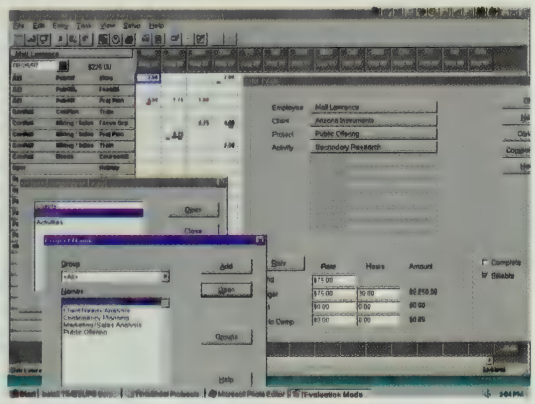
A good example of a set of general accounting packages that can be adapted to architects' use is offered by Sage U.S. This is a newly formed subsidiary of The Sage Group in England. It combines the publishers of popular accounting and time management packages that, unlike Wind2, are not specific to architects. DacEasy, the accounting program, has been around since 1984. It's aimed at small and medium-size businesses. Version 4, a Windows 95/NT program, started shipping in October 1997. Sage also publishes TimeSheet Professional 5.5, through its TimeSlips division. It offers more flexibility than previous releases and TimeSlips itself in recording costs such as overheads, and is compatible with Crystal Reports and with remote access through Web browsers.

Project planning software

Primavera Project Planner (often called P3) has been the industry leader for more than a decade, although it provides more power than necessary for projects in the "under $5 million" range. Version 2.0 includes a charting technique that gives you a good view of the relationships of various project activities, better ways to "level" or reschedule resources, and strong Internet links. There's even a fairly functional "Web publishing wizard" to guide you through building and maintaining a project Web site. You can even set hyperlinks inside activity logs for viewing over a network. The old E-mail functions have been expanded as well. The price is $4,000.

If you don't have to link multiple projects and multiple users with the sophistication of P3, Primavera sells SureTrak Project Manager 2.0 (which allows for some linking of projects). Even this cut-rate project planner can publish projects to the World Wide Web for viewing by others. And you can graduate to P3 if you ever need it—SureTrak reads and writes P3 files. Estimated street price is less than $400. If you are





TimeSheet Professional is a general accounting program that lends itself well to the business of architecture. It can log each employee's billable expenses for a number of projects (far left) as well as keep track of hours worked.

absolutely a novice at project planning, try SureTrak first. In between P3 and SureTrak is Scitor Project Scheduler 7, with a street price well under $600. It also has excellent E-mail and Web publishing and can allocate a firm's resources across multiple projects. A five-user license is $2,900.

At the low end, try QuickGantt from Ballantine & Company. It's not for total novices, but it does come with a library of project worksheets. A basic version is $99.95, and Version 2.0 for Windows is $199. But spring for 2.0 Plus, at $249 (multiuser versions start as low as $349). It lets you link various tasks automatically and import data from spreadsheets. Linking, standard in the bigger commercial packages, updates subsequent activities automatically when you change an action early in the process.

Project tracking and contract control software

This category allows you to see every phase of a project, and how costs and time lines might be affected as a change ripples through. The problem is that your record keeping must be in pretty good order to use this type of package. If you are manually paying bills to contractors, for instance, you will have to manually copy the bills and payments to a file the contract control software can read—a fraud-prone idea.

Primavera's Expedition 6.0 has been demonstrated at shows for the past three or four months. One elegant new feature of this $2,500 package (substantial multiple-seat discounts are available) is a "project dashboard" that displays a graphic view of budgeted and committed changes and submittals that might be critical to the project's completion.

PROGRAMS CAN HANDLE EVERYTHING FROM WORK ORDERS TO BILLING.

Expedition also allows you to customize how changes are processed in a project—to focus, for instance, on contractor costs or on internal resources. Expedition can import files from P3 and SureTrak as well.

The delivery systems: management and the Web

As with almost everything else in the software business, vendors have been grooming their packages for Internet access. Their idea is to use the World Wide Web to publish and update information (RECORD, September 1997, pages 131–37). Microsoft's Small Business Server and Bentley's Engineering Back Office have already been mentioned. In addition, Primavera offers Webster, for access to information created in Project Planner or SureTrak Project Manager. Framework Technologies is pushing Aspects SiteBuilder for project-specific Web sites and Aspects ProjectServer to manage transactions concerning projects on line.

On the facilities management side, Harper and Shuman introduced Windows-compatible software in 1996. Drawbase Software, which has repositioned its Drawbase drafting software as a facilities management tool, has also packaged it with DP Solutions' PMC for Windows, computerized maintenance management software. These programs can handle everything from work orders to purchasing, inventory, labor and materials tracking, and, of course, billing and payables. ■

Contact information for the vendors mentioned in the text are listed here. In addition, many of the vendors' Web sites include directories of consultants who can help you choose and implement management software systems.

- Ballantine & Co.: QuickGantt
 One River Rd., P.O. Box 805, Carlisle, MA 01741-9950; 800/536-6677
- Bentley Systems: Bentley's Engineering Back Office
 690 Pennsylvania Dr., Exton, PA 19341; http://www.bentley.com; 800/BENTLEY
- Drawbase Software: Drawbase
 222 Third Ave., Suite 2300, Cambridge, MA 02142; http://www.drawbase.com; 800/545-4223
- Harper and Shuman: CMFS/Advantage
 68 Moulton St., Cambridge, MA 02138; http://www.harperandshuman.com; 617/492-4110
- Intuit: QuickBooks
 2535 Garcia Ave., Mountain View, CA 94043; http://www.intuit.com; 800/446-8848
- Microsoft: Microsoft Small Business Server
 One Microsoft Way, Redmond, WA 98052; http://www.microsoft.com/smallbiz or http://www.microsoft.com/backofficessmallbiz; 800/60-SOURCE
- Primavera: Primavera Project Planner and SureTrak
 Two Bala Plaza, Bala Cynwyd, PA 19004; http://www.primavera.com; 800/423-0425
- Sage U.S.: DacEasy, TimeSheet Professional, and so forth
 17950 Preston Rd., Suite 800, Dallas, TX 75252; http://www.sageus.com; 972/818-3900
- Scitor Corp.: Project Scheduler 7
 333 Middlefield Rd., Menlo Park, CA 94025; http://www.scitor.com; 800/533-9876
- Seagate Software: Crystal Reports, Seagate Software
 920 Disc Dr., Scotts Valley, CA 95067; http://www.seagatesoftware.com; 408/438-6550
- Semaphore: Semaphore
 3 East 28th St., New York, NY 10016; http://www.sema4.com; 800/545-7484

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MBMA
METAL BUILDING MANUFACTURERS ASSOCIATION

IN ASSOCIATION WITH
THE METAL BUILDING MANUFACTURERS ASSOCIATION PRESENTS...







AN INTEGRATED DESIGN APPROACH OFFERS FLEXIBILITY, ECONOMY, DURABILITY

An Evaluation of Metal Building Systems

Metal building systems provide an integrated set of interdependent elements and assemblies. Yet, each system is unique—custom-designed and engineered, produced by the manufacturer, and then erected on the construction site. Interface with CAD, along with the ability to clad the buildings in brick, precast concrete, stone, wood, architectural metal or glass, allows great flexibility in design aesthetics.

The process of creating a successful structure begins with a basic understanding of the various elements and options available on the market today, as well as energy efficiency and acoustical considerations. Once these are assimilated, design creativity can begin. With this in mind, the Metal Building Manufacturers Association (MBMA) offers this compendium, in association with the AIA/ARCHITECTURAL RECORD Continuing Education Series. Architects can earn two continuing education credits by reading the section, studying the learning objectives, and answering the questions on page 164.

Metal building systems comprise nearly 70 percent of the one- and two-story, nonresidential building market in the U.S. The MBMA was founded in 1956 to address issues relating to structural design, fire insurance, building codes, transportation, and safety in such buildings. MBMA member companies provide engineering design, structural steel framing systems, metal wall and roofing systems, and accessory equipment for low-rise nonresidential construction. MBMA works closely with the American Institute of Steel Construction, American Iron and Steel Institute, American Society of Civil Engineers, and the model building code organizations in maintaining and improving national design standards. For more information contact: MBMA, 1300 Sumner Ave., Cleveland, Ohio 44115-2851. (216) 241-7333. Or visit MBMA's website at http://www.taol.com/mbma.

LEARNING OBJECTIVES

After reading *An Integrated Design Approach Offers Flexibility, Durability, Economy* and completing the following exercise, you will be able to:

1. Identify how today's metal buildings differ from the metal building systems of the past with regard to design options and process.

2. Explain nine advantages of metal building systems design and fabrication.

3. Identify the benefits of a metal building systems industry certification program offered by the American Institute of Steel Construction.

4. Identify one or more building component types with their corresponding applications.

5. List at least four steps for preventing condensation degradation of insulation.

METAL BUILDING SYSTEMS

The metal building systems industry was born to fulfill an urgent need—to house troops during World War II. The most famous example, the Quonset Hut, was a half-round structure that could be easily constructed by unskilled labor using only hand tools and then disassembled and transported to a new location. After the war, the first standard metal building kits were mostly utilized for industrial and agricultural purposes. By the late 1960s, the industry had gained a reputation for its economy and speed of production and delivery and was used for wider applications. The systems, however, lacked any flexibility in design. So as demand grew from architects, engineers, and building owners for greater systems flexibility, manufacturers of metal building systems retooled their factories offering more systems options. Today, metal building systems dominate the one- to two-story nonresidential building market, comprising nearly 70 percent of the market.



The great opportunity for change, growth, and development paralleled the rise of computer technology and the use of CAD systems in architecture and engineering. In effect, the term "pre-engineered metal buildings" has become a misnomer. The standardization inherent in systems-based buildings make it a natural application for computer-aided design and engineering. There are, in fact, no standard buildings anymore. Each is custom designed as a unique project.

Greater flexibility than ever before is now possible. Designers can select straight or tapered columns, variable or odd-sized bays or modules, single-slope or double-slope buildings, with centered or off-center ridges. These systems can be integrated with a wide variety of wall materials, such as block, brick, tilt-up concrete, curtain wall, or metal. Flat, conventional roof design has given way in popularity to a water-shedding design, in which a sloped roof element is a key part of the overall image of the structure. Size can vary tremendously: the average is 10,000 to 20,000 square feet, but can range to more than one million square feet.

Critical to the engineering/design process is determining the safe loads which the structure must be able to support—such as dead load, roof live load, roof snow load, wind load, seismic load, and auxiliary load. The architect should consult local building code requirements. The MBMA publishes the Low-Rise Building Systems Manual that defines and recommends minimum design loads for metal building systems. In addition, formulas for calculating wind pressure and suction for various building geometries are given. Values of lateral, tractive, and impact loads for overhead cranes are also listed.

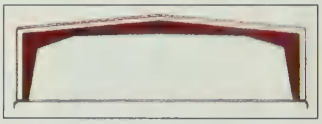
While computer technology has streamlined the design and engineering process, real economies still come through the fabrication of structural elements. Completion of a metal building systems structure is possible in roughly two-thirds the time of a conventional building. Since all elements are factory fabricated, precut and prepunched under controlled factory conditions, where efficiency and quality can be exercised to a much greater degree than in the field, waste material is minimized. And it is generally easier to predict erection costs and erection time than with conventional construction. Typically, the buildings are shipped within six to eight weeks from the date an order is received.

The design professional reaps the benefits of single source responsibility, since the metal building systems company takes responsibility not only for engineering and fabrication, but also the performance of the entire building shell. It is important for the design professional to ensure that the design criteria, particularly lateral drift and deflection of the primary frame and/or secondary supports, are consistent with the chosen wall materials. Manufacturers can provide a "letter of certification" with each building that assures the metal building system has been designed in accordance to specified state and local codes and/or specified project design requirements. A variety of warranties are offered on metal building systems. These may include finish warranties on roof and wall systems and weathertight warranties on roof systems.

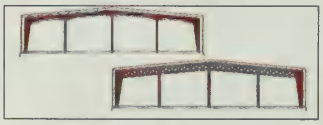
METAL BUILDING SYSTEMS ELEMENTS

Metal building systems offer a completely integrated set of interdependent elements and assemblies, which, taken together, form the total building. Included are primary and secondary framing elements, covering components, and accessories. These building block parts come in many different configurations, as illustrated below.

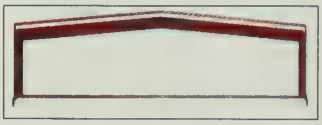
Framing Systems



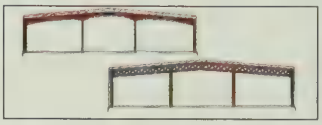
Rigid frame clear span: Provides a column-free interior space 20 feet to 160 feet and wider. Recommended applications include auditoriums, gymnasiums, warehouses and aircraft hangars.



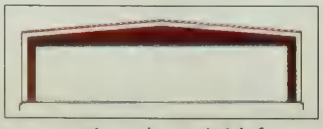
Ridge frame multi-span (solid web rafter) and modular open web (open web rafter) — 50 feet to 500 feet and wider. Used where interior columns do not impair the function of the building. Interior columns shorten the spans of the rafter beam, thereby often reducing the frame cost. Recommended applications include manufacturing facilities and warehouses.



Flush wall clear span—20 feet to 70 feet and wider. Offers not only column-free interior floor space but also uniform depth columns. The secondary wall structural systems (girts) are totally flush with the interior flanges of the columns. This allows interior sidewalls to be finished without the frame columns protruding into the interior wall line. Recommended applications include retail stores, branch banks, and office facilities.

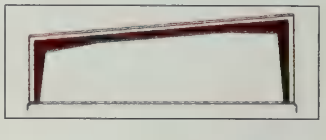


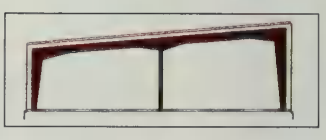
Flush wall multi-span—50 feet to 250 feet and wider. Available with solid or open web rafters. Uniform depth exterior columns with girts are totally flush with the inside column flange. Interior columns reduce span lengths, thereby reducing costs. Recommended applications are buildings where interior sidewalls are to be finished for office areas or for warehouses and distribution centers where "close to wall' palletizing is required.



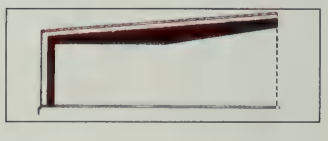
Tapered beam straight columns—15 feet to 70 feet and wider. Clear span with uniform depth columns. Greater vertical and horizontal clearance at column/rafter connection than rigid frame clear span. This system is economical for narrow widths. Recommended applications include offices, retail stores, and buildings with bridge crane systems.

Single slope clear span—20 feet to 160 feet and wider. Available with solid or open web rafters. This system provides single direction roof slope for rainwater runoff control. It is often used for shopping centers and office complexes where rainwater must be directed away from parking areas.





Single slope multi-span—50 feet to 200 feet and wider. Available with solid or open web rafters. The single slope design facilitates rainwater runoff control. This system is used in facilities where interior columns do not impair building function. Recommended applications—manufacturing, warehousing, and distribution centers, retail shopping centers, and office complexes.



Lean-to—10 feet to 60 feet and wider. Used primarily for wing units and additions to existing facilities. A lean-to can be used with any of the above framing types.

Wall Systems

Wall systems typically consist of a wall panel and girt. Girts are cold-formed "C" or "Z" sections and are attached to the columns of the primary frame to support the wall panel against lateral loads. They may frame into the column webs, or be attached to the outer flange. Flush framing provides more usable building floor area. The panel and girt act in concert to resist pressure and suction placed on the system by heavy winds.

Panels are available in a variety of textures, with embossed and sand-finished metal available. Manufacturers stock standard colors and can obtain special colors from their suppliers to match architectural requests. Often, the exteriors of the panels are integrated with another material—brick, precast concrete, glass, stone, or wood.

Two types of wall assembly methods are available, field assembly or factory assembly.

Field Assembled Systems. The system consists of optional interior liner panels, exterior metal panels, and insulation, usually blanket fiberglass insulation. Advantages include rapid erection of panels, cost competitiveness and quick and easy replacement. Openings for doors and windows can be created quickly. In addition, the panels are lightweight, so heavy equipment is not required—nor are large foundations or heavy spandrels. Acoustic surface treatments can be easily added to interior panel walls at reasonable cost.

Factory Assembled Panels. This system consists of an outer panel and an interior face formed over an insulating core, usually a foam material. It is normally fastened outside

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the girt. Panels providing insulating values are available from several manufacturers. This system has a lightweight, hard surface interior liner connected to the panels by side lap fasteners that are normally concealed to produce a clean appearance.

Two types of fastener systems are available, exposed fastener or concealed fastener systems.

Exposed fastener systems. Panels vary in depth and are available in widths of two feet to four feet and thickness ranges from 26 gauge to 20 gauge steel. The most common wall panel thickness is 26 gauge. Wall panels are attached to "C" or "Z" girts with self-tapping screws, self-drilling screws, or expanded fasteners, and joined to each other at their sides and ends in lap joints. Profile panels range in depth from 1 inch to 2 inches and are available in widths from 28 inches to 40 inches with varied patterns and colors.



Concealed fastener systems. Designed with edge joints that conceal the fasteners, the panels are available in many different profiles and finishes. These panels usually have deeper cross sections and can allow longer spans between girts.

Roof Systems

Roof systems are made up of two components: purlins and roof panels.

Purlins. Two types of purlins support the weight of the roof and any applied loads—cold-formed steel (either "Z" or "C" sections) and open web joist. The purlins work to transfer these loads to the primary structural system. The "Z" or "C" sections can either be simple spans, or more commonly used as continuous beams between frames. They can be used on spans of up to 30 feet. For spans greater than 30 feet, open web joists or deep "Z" sections may be used for purlins. Open web joists are utilized as simple spans.

Roof panels. Panels are fabricated from light gauge steel as a lap seam roof or a standing seam roof system. The panel of a lap seam roof is typically 1 inch to 1-1/2 inches deep, 26 or 24 gauge thick, and connected together by lapping. A sealant is installed between the panels at the sidelaps and end laps and fasteners are used to secure them. The selection of panel depth and thickness is affected by the roof load, purlin spacing, and insurance considerations.

Standing seam panels. The seam between two panels is made in the field with a device that produces a cold formed weathertight joint at the sidelap of each panel. The panel is attached to the purlins with a clip concealed inside the seam, which allows a secure attachment while permitting thermal expansion or contraction. Since a majority of the through-the-roof fasteners have been eliminated, a continuous single skin membrane results. Thermal spacer blocks can be placed between the panels and purlins in order to provide a consistent thermal barrier. The metal standing seam roof can be used to renovate and restore old, leaking flat roofs to better than original condition by adding a slope—in other words, turn a flat roof into a water-shedding one. Various finishes and colors are available. The products can be used in either a structural, low slope application or a highly visible architectural metal roof situation.

Bracing Requirements. To complete the roof system, metal building manufacturers typically provide bracing for the purlins. Depending on the design assumption used, different types and arrangements of bracing may be utilized. Bracing systems include "straps," channels, or sag angles. All of these systems span from purlin to purlin. For a standing seam roof system, the amount of lateral support provided by the panels to the purlins has to be determined through testing, if it is to be included in the design. That is why a standing seam roof system from one manufacturer may have more visible bracing than another.

Special Design Considerations

Frame shape and peak location. Both can be important components of the design. The majority of buildings supplied today are the traditional rectangular shape, yet many other shapes are possible—L's, T's, U's, and octagons. The majority of metal buildings supplied are single slopes or gable buildings with the ridge on center of the frame. The peak can be moved off center, however, to almost any location on the frame. A single slope building can be positioned with the high or low side facing the front, depending upon drainage or architectural requirements. When frames with multiple ridges or with a valley instead of a ridge are specified, an interior drainage system will be designed by the metal building manufacturer.

Bay sizes. While in the past only two or three bay sizes were commonly offered, any bay size is now possible. When the building has interior columns, the interior columns can be of different spacing patterns.

Column shapes. Tapered perimeter columns are often the most economical choice, but straight columns can be used at the perimeters. The perimeter columns are normally fabricated H-shape and can be parallel or tapered. Interior columns can be supplied in many different shapes, including hollow structural shapes, hot rolled H-shapes, and fabricated H-shapes.

Column heights. Heights can vary to provide a step in roof elevation or in floor elevation.

Accessories. A variety of structural and nonstructural accessories can be included: insulation, gutters, downspouts, roof ventilators, roof openings, interior liner panels, wall vents, wall openings, windows, pedestrian doors, overhead doors, canopies, skylights, fascia, and trim. These elements can add aesthetic variety.

Expandability. Metal building systems are easily expanded. This usually involves the removal of an end or sidewall, the erection of additional structural frames, and the addition of matching wall and roof coverings. Manufacturers routinely perform assessments of adding on to a metal building system, including structural and roof drainage analysis.

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ENERGY EFFICIENCY & ACOUSTICAL CONSIDERATIONS

Energy considerations and controlling condensation is an important part of providing an energy efficient building. Condensation can lead to long-term detrimental effects including corrosion and degradation of insulation. Condensation occurs when warmer moist air comes in contact with cold surfaces such as framing members, windows and other colder regions within the insulation envelope. Warm air, having the ability to contain more moisture than cold, loses that ability when it comes in contact with cold surfaces or regions. When this happens, excessive moisture in the air is released in the form of condensation. If this moisture collects in the insulation, the insulating value is decreased since wet insulation has about the same heat conductance value as water. Condensation problems are most likely to occur in climates where temperatures frequently dip below 35° F over an extended period of time.

A practical guide to providing energy efficiency and protection against condensation within a wall or roof assembly includes:

- Knowledge and control of the air temperature and relative humidity inside the building and knowledge of outdoor temperatures.
- Installation of an integral vapor retarder on the warm side of the assembly (under winter conditions). The main function of the vapor retarder is to slow down the flow of moisture through a roof or wall assembly. Permeability is measured in perms. The lower the permeance, the more effective the vapor retarder is. A 0.02 perm is recommended.
- Installation of sufficient insulation thickness (between the outside skin and the vapor retarder) to keep the temperature of the vapor retarder above the dew point temperature of the environmental air inside the building.
- Whenever possible, vent the insulated spaces to the outdoors to provide an escape path for moisture that gets past the vapor retarder.

Acoustics. Another important consideration in selecting insulation is acoustics, often viewed as a problem with metal building systems. Both the level of interior and exterior noise can be greatly reduced by several types of thermal insulation. The insulation's noise absorption properties help prevent the transmission of exterior noises, such as rain, hail, aircraft, and traffic. In addition insulation helps to quiet noise within the building by absorbing reverberating sound. This is especially important in manufacturing buildings where there may be high noise levels.

Types and thickness of insulation have the largest influence on thermal efficiency of a building as insulation traps still air and slows down conductive heat transfer. Two basic types of insulation are most commonly used for metal building systems: fiberglass, and rigid board.

Fiberglass blankets are the most common types of insulation used in roof and walls of metal buildings because of their low cost, fire and sound resistance, and ease of installation. The insulation is placed on the outside of the purlins and girts and the panels are applied over them. In the case of the standing seam roof, an "insulation block" may be placed over the purlins to eliminate any heat loss due to the compressing of the blanket insulation.

A second form of roof insulation is rigid board, usually made out of polyisocyanuate material. Most often a metal liner panel is installed over the purlins, the rigid board is laid in place with a vapor barrier, and the standing seam roof installed over it. The clip rests on a bearing plate over the insulation and the fastener goes through the board insulation into the underlying structure. This is referred to as a "composite roof."

DESIGN FLEXIBILITY AND AESTHETICS

Current uses of metal building systems include malls, shopping, centers, offices, plants, warehouses, recreational centers, or any other use appropriate for a low-rise building. What distinguishes this type of construction today is a surprising aesthetic variety, due to the flexibility allowed through different combinations of the system's basic elements as well as the ability to clad the buildings in brick, precast concrete, stone, wood, or glass. Following are several examples of the aesthetic qualities possible to achieve through the use of metal building systems.

Continued...

CERTIFICATION

Designers may want to give consideration to the American Institute of Steel Construction (AISC) comprehensive certification program for the metal building systems industry. To maintain a high level of credibility, the program includes a rigorous third-party examination of the engineering and manufacturing policies and procedures of metal building systems manufacturers, as well as quality assurance and control standards.

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DESIGN FLEXIBILITY AND AESTHETICS continued...

Bay Industries Corporate Headquarters Green Bay, Wisconsin

The new corporate headquarters for Bay Industries illustrates the versatility of metal building systems. Located on 26 acres of land in Green Bay, Wis., the building consolidates the operations of the company into a new facility. It was designed to be functional and economic and accommodate future expansion—and to meet the requirement of Bay Industries President Arnie Schmidt to be "housed in the most attractive building in Green Bay."

Designed by Steve Klessig, architect, of Kaukauana, Wis., the building makes extensive use of limestone, masonry and glass to achieve a traditional yet timeless appearance. It features a 5,000-square-foot, octagonal-shaped, skylight entrance, flanked by two 30,000 square foot office wings. A 130,000 square foot manufacturing and warehouse building extends south of one of the wings.

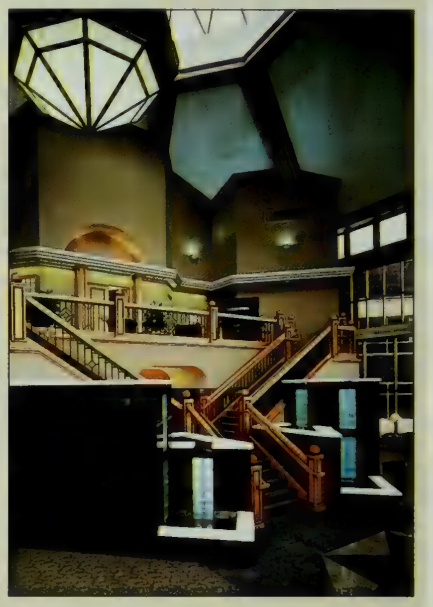
"We looked at all the various methods of construction," Klessig says, "including conventional steel, precast concrete, masonry systems, and some panel systems. We recommended a metal building system not only because it was the most economical, but because it offered the greatest flexibility in creating custom designs and architectural elements."

The focal point of the design is the octagonal lobby, which rises 58 feet and is topped by a glass dome. Radiating from it are the two office wings, which visually creates a sense of symmetry and balance. The use of concrete, masonry, and glass lends a banded appearance to the exterior.

Adding to the visual variety is the roofing system. "We didn't want the silver-colored roof to be entirely visible, but thought we could create an interesting look if we emphasized certain parts of the roof," Klessig says. "So we accented the canopy, the hipped roof on the octagonal entranceway, and two front building corners and the middle sections of the office wings with a concrete tile roof. This technique created a dynamic contrasting appearance via the use of different materials."

Soon after construction began, the Schmidts decided to enlarge the warehouse by 62,000 square feet, a simple process because of the metal building systems construction. "Since the structure was already designed for future expansion," Klessig says, "all we had to do was order additional framing and roofing materials. It was easy to duplicate the frame design because the width of the building hadn't changed. The engineering was already complete. It just became an additional fabrication job for the metal building systems manufacturer."

The architect, contractor, and owner agree that the project, which was finished on time and within its budget, benefited from the single-source responsibility that defines metal building systems construction. The group worked closely with the metal building systems manufacturer and its structural engineers from the beginning—and throughout—the project.







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DESIGN FLEXIBILITY AND AESTHETICS continued...



Bouchaine Vineyards
Napa, California

In Napa, Calif., the Bouchaine Vineyards used the slab of its original building and on it reconstructed a new metal building systems winery. Architect William Turnbull Associates, of San Francisco, obtained great visual variety through the use of a sloping shingle roof, exterior walls of re-sawn redwood wine barrels, windows, stone façade detailing, and a recessed entrance. Three cupolas allow for ventilation. The utilitarian nature of the interior is evident in the work areas, while the offices have more elegant wood and concrete masonry partitions. Construction of the 24,000-square-foot winery was phased so as not to disrupt the winery's operations.



Staples Street Station
Corpus Christi, Texas

The Staples Street Station was the first new station designed when the regional transportation authority decided to consolidate transfer points. Designed by John R. Wright, Architect, the station features a metal building systems roof, which gains visual attraction by fragmenting its sloped elements. This shed-like structure provides shade and protection from rain for transit passengers; about 3,000 bus passengers and 13 bus routes pass through the transit stop during weekdays. It was designed in an open concept approach so that a clear line of sight is provided through the entire structure, a design to promote a sense of personal security. The metal roofed shed is connected to a masonry head house featuring a clock tower.



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LE 43 ON INQUIRY CARD

LEARNING OBJECTIVES

After reading *An Integrated Design Approach Offers Flexibility, Durability, Economy* and completing the following exercise, you will be able to:

1. Identify how today's metal buildings differ from the metal building systems of the past with regard to design options and process.

2. Explain nine advantages of metal building systems design and fabrication.

3. Identify the benefits of a metal building systems industry certification program offered by the American Institute of Steel Construction.

4. Identify one or more building component types with their corresponding applications.

5. List at least four steps for preventing condensation degradation of insulation.

QUESTIONS

1. List at least 10 attributes that illustrate flexible design options in metal buildings.
Answer

2. What role does computerization play in metal building design?
Answer

3. Describe the cost and time efficiencies that make metal buildings attractive options.
Answer

4. What does the American Institute of Steel Construction comprehensive certification program cover?
Answer

5. List the framing options suggested for each of the following applications:

a) Auditoriums and gymnasiums:
Answer

b) Manufacturing facilities and warehouses
Answer

c) Retail stores, branch banks, and office facilities
Answer

d) Office areas
Answer

e) Wing units and additions to existing facilities for any of the other framing types
Answer

6. Outline a four-prong strategy for preventing condensation within metal wall and roof assemblies.
Answer

ANSWERS

Answers refer to An Integrated Approach Offers Flexibility, Economy, Durability (page 152) and to the questions on this page. After completing the answers, fill out the self-report form (page 248) and submit it to receive two AIA Learning Units.

1. Metal building systems are composed of mutually dependent components and assemblies including primary and secondary framing, cover, and accessories. Systems can e produced in a variety of colors and shape. Designers can select straight or taper columns, variable- or odd-sized bays or modules, single slope or double slope buildings with centered or off centered ridges. These systems can be integrated with conventional wall materials, such as block, brick, tilt-up concrete, or pre-cast metal walls. Metal building systems roofs are designed to shed water. Size can very tremendously; the average is 10,000 to 20,000 square feet, but can range to over more than one million square feet.

2. Programs can now be easily standardized to fit the structural types, standard loads, and load combinations that had formerly been laboriously cranked out on a desk calculator. The structural analysis, design, bill of material, fabrication drawings, and erection drawings are usually produced by computer.

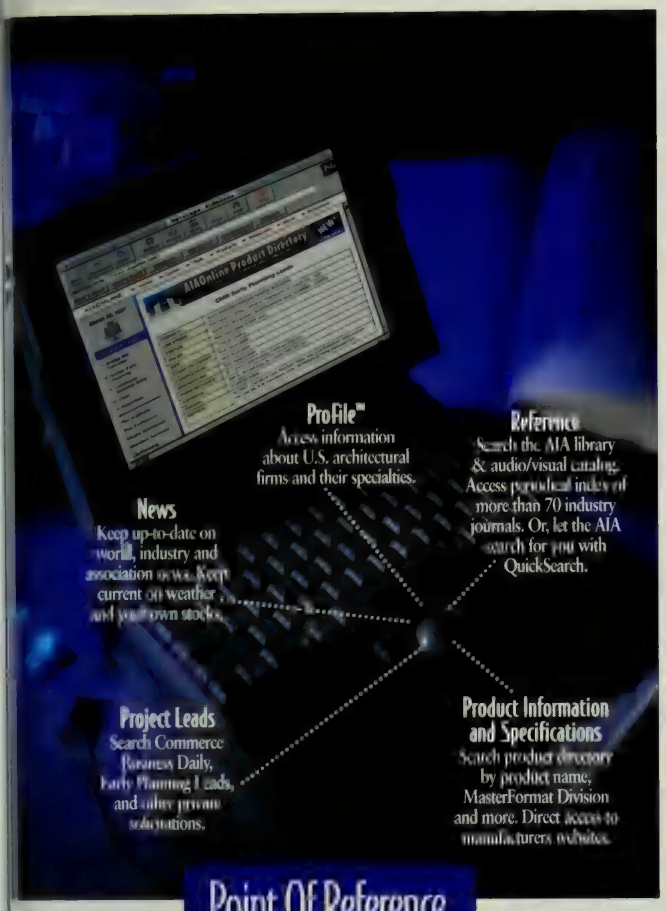
3. Metal building systems construction takes place in the factory, a process which improves quality, reduces waste, and saves on typical job site material costs. Strength-to-weight ratios are maximized. Metal systems design and fabrication saves up to a third of the construction and erection time of non-metal buildings. Occupancy can occur sooner. Manufacturers test their products. Buildings are packaged and shipped to the jobsite. The manufacturer also sens a comprehensive parts list and erection drawings to the erector or building/contractor. Further savings are realized because less extensive foundation is required by metal building framing systems with walls that are nonload bearing.

4. The American Institute of Steel Construction comprehensive program for the metal building systems industry requires rigorous third-party examination of a manufacturer's engineering and manufacturing policies and procedures, as well as its quality assurance and control standards.

5. a) Rigid frame clear span
b) 1.Rigid frame multi-span (solid web rafter) and modular open web (open web rafter)-50 feet to 500 feet and wider
2. Single slope multi-span-50 feet to 200 feet and wider
c) 1. Flush wall clear span-20 feet to 70 feet and wider
2. Tapered beam straight columns-15 feet to 70 feet and wider
d) 1. Flush wall multi-span-50 feet to 250 feet and wider
2. Single slope clear span-20 feet to 160 feet and wider
e) Lean-to-10 feet to 60 feet and wider.

6. a) Control the indoor air temperature and humidity particularly relative to outdoor temperatures.
b) Install an integral vapor retarder with a 0.02 perm on the war side of the assembly
c) Install sufficient insulation
d) Vent insulated spaces to outdoors.

CIRCLE 44 ON INQUIRY CARD



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SPECIAL ADVISORY:
Divergent Wood Flush Door Standards May Cause Confusion to Architects
(See Page 180)

AIA/ARCHITECTURAL RECORD
Continuing Education Series

NWWDA
NATIONAL WOOD WINDOW AND DOOR ASSOCIATION

In Association With
The National Wood Window and Door Association
Presents:

Replacement Wood Windows & Doors Renew the Life of Old Buildings

Few features are as critical to reestablishing the character of an old building as its windows and doors. Of all the architectural elements to be renovated, therefore, windows and doors are most critical. Inappropriate changes can drastically alter the building's aesthetics, affecting its overall historical integrity. This holds true for landmarked masterpieces as well as vernacular structures.

Over the past decade, wood window and door manufacturers have risen to the challenge; the industry offers a broad range of wood window and door replacement products that replicate historic window and door profiles. As wood windows and doors offer the greatest flexibility in design and detail, manufacturers now produce true divided lite replacement windows and doors and match existing exterior profiles. In semi-custom installations, historic styles can easily be replicated—from Palladian arched heads to narrow sidelites. Replacement wood windows and doors offer a durability and beauty approximating a building's original appearance.

Brought to you by the National Wood Window and Door Association (NWWDA) in association with the AIA/ARCHITECTURAL RECORD Continuing Education Series, the following synopsis offers practical information on the replacement of wood windows and doors in old buildings. The replacement process begins with an investigation of the old—what current problems and inadequacies exist and how those can be corrected with replacement units. Architects can earn two continuing education credits by reading the section, studying the learning objectives, and answering the questions on page 182.

NWWDA is comprised of the country's leading producers of wood sash, frames, window units, flush doors, stile and rail doors, skylights, and sliding and swinging patio door units, as well as producers of the numerous other materials required to manufacture the industry's products. As a professional trade organization, it formulates and promotes high standards of performance for the industry. More information on NWWDA, its standards, testing procedures, and information literature can be obtained from NWWDA, 1400 E. Touhy Ave., Suite 470, Des Plaines, Ill. 60018 (847) 299-5200. Or visit NWWDA's website at http://www.nwwda.org.

Learning Objectives

After reading *Replacement Wood Windows & Doors Renew the Life of Old Buildings* and completing the following exercise, you will be able to:

1. Contrast today's windows with those found in historic buildings.
2. List at least ten key elements to consider when evaluating windows and doors.
3. Identify a change to NWWDA Standard IS 1-A-97.

PRESERVING THE HISTORIC FLAVOR OF WOOD WINDOWS AND DOORS

As with other building systems, technological advances have greatly altered the design of windows and doors. We take for granted the high thermal properties, noise control, and security characteristics currently available in windows and doors, for example, and when renovating buildings expect to achieve the same performance today. Yet, contemporary windows can be vastly different in appearance than those found on historic buildings—landmarks and vernacular buildings alike. While not always the case, the goal in renovation—be it strict preservation or adaptive use—most often is to save the architectural integrity of the old building even though its use may change drastically.



All 843 windows of the former B&O Railroad warehouse were replaced under the direction of HOK Sports. The warehouse adjoins the Baltimore Oriole's new Camden Yards stadium.

The desire to "identify, retain, and preserve" the functional and decorative features of windows and doors, and whenever possible, maintain the existing architectural fabric, is identified in the U.S. Department of Interior's preservation standards. These standards, in turn, reflect those set forth in local preservation ordinances and by regulatory agencies. Increased awareness of the role of windows and doors in defining a historic building came in the mid-1970s with the establishment of the federal tax incentives for historic preservation. While those incentives have been significantly scaled back, the ethic remains strong. In general, appropriate solutions should respect the window's original proportions and glazing divisions, and materials, whenever possible. Since historic buildings predominantly feature wood windows and doors, replacement in wood is a logical step. Wood windows and doors also offer the advantages of durability and energy conservation. In the case of strict renovation, the use of wood window and doors may be the only choice.

This is more easily said than done. For example, as thermal performance has significantly improved, the size of window muntins has increased as drastically to provide a stronger structural system for heavier window panes. This, in turn, translates into a thicker window sash than found in the historic building. Alterations must be provided.

But before determining what alterations are necessary, the first step in any preservation project is the assessment of the current condition of the windows and doors. This assessment should include an examination of winter heat loss and summer heat gain from infiltration and conductive heat transfer.

Basic information on each window should detail the location of the unit, condition of paint, condition of frame and sill, condition of sash (stiles, rails, and muntins), glazing, hardware, and overall condition.

Doors need to be examined for fire safety and accessibility qualities. Look at exterior doors differently from interior doors, for exterior doors are much more subject to abuse from sun and wet weather and extreme weather changes. Note all particulars, such as shape, width, height, thickness, finish, hardware type, operation (single, double, garage, pivot, sliding, or pocket) and location. Don't expect to find the sophistication, stability or preservation qualities of modern doors and veneers.

The goal in replacing doors is improved performance, such as higher fire ratings, improved air and water infiltration control, better structural performance, reduced sound transmission and greater insulating efficiency. Door lites can accommodate the range of new glazing technologies, from dual and triple glazing to low-emissivity coatings.

The replacement of windows and

Continued on p-170...

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Endoscopy Center of Delaware

New Castle, Delaware

PROJECT ARCHITECT: MARK REYNOLDS

PROJECT TEAM: PAUL GUGGENBURGER

PRINCIPAL IN CHARGE: KERRY HABER, AIA

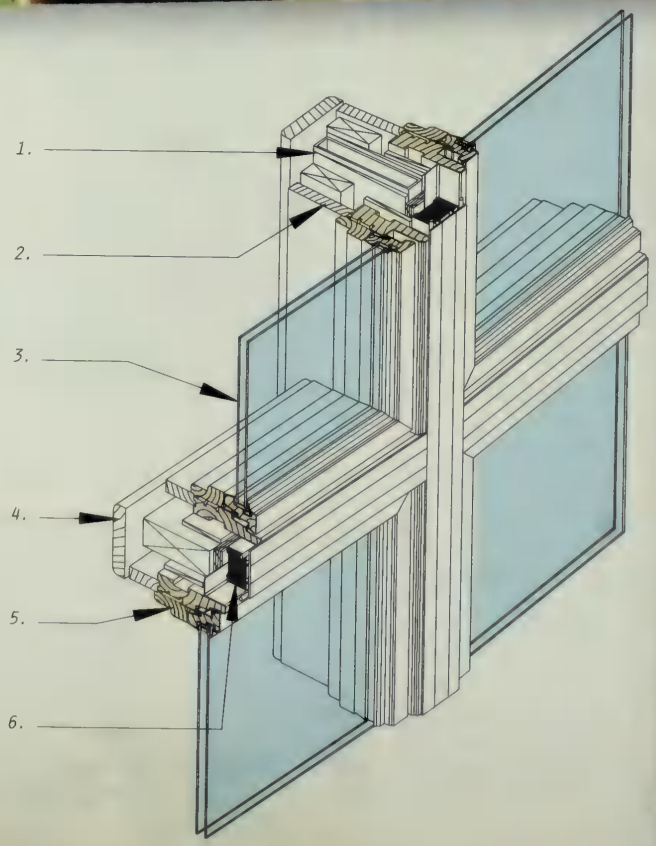
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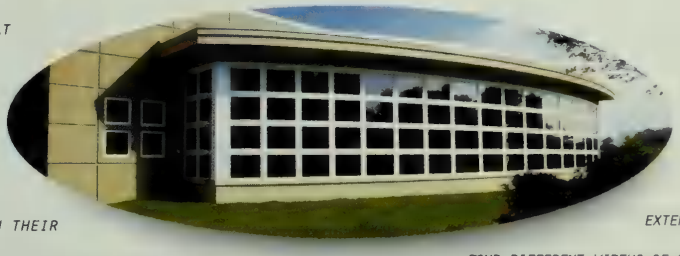


ithout being forced to use custom windows." Mark Reynolds, Project Architect



Project Outline

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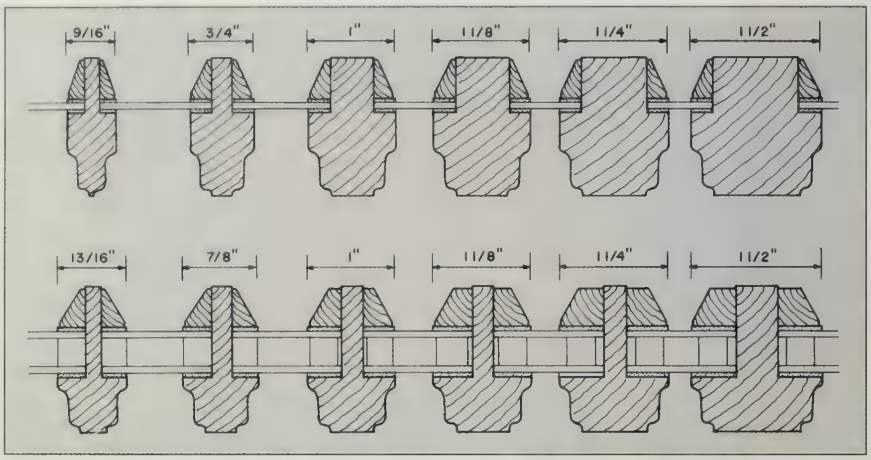
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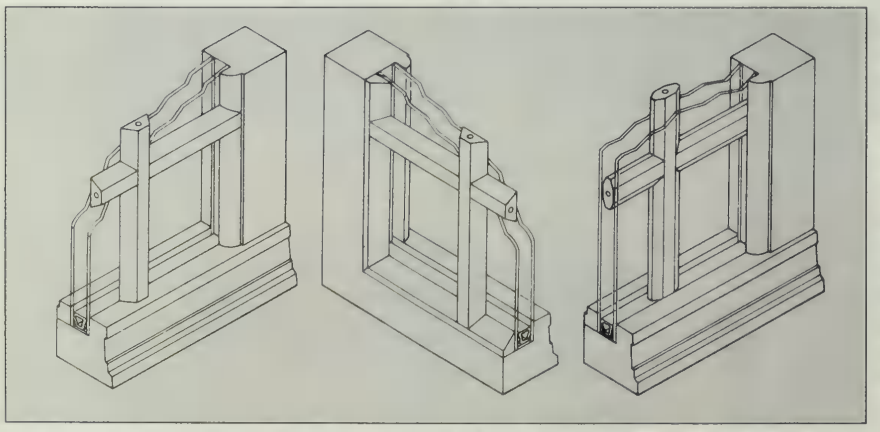
doors should start with a thorough understanding of the current conditions and should include the window and surrounding wall and the door and its frame, according to Michael J. Louis and Thomas A. Schwartz of the consulting engineering firm of Simpson Gumperz & Heger Inc. Problems, for example, such as excessive air and water penetration, may be the result of the way in which the window or door is integrated with the surrounding wall. Louis and Schwartz suggest the following:

- Review the documents of the existing construction (architectural and shop drawings, if available), reports of complaints (leakage, condensation, operability), and specifications and manufacturer's literature.
- Survey the interior walls for staining and other evidence of leakage.
- Survey exterior wall conditions.
- Probe internal conditions by selective disassembly of wall and window components.
- Test the existing window units, perimeter joints, and adjoining wall surfaces to isolate air and water leakage sources, which can include glazing, frame corners, perimeter sealant, and adjacent walls or roof.

Each building will produce a unique assessment, the results of which must be weighed in light of the extent and type of preservation planned—i.e., a strict renovation or adaptive use. In many projects, not all windows will need replacement. One must view the alternatives—repair, replication, or replacement—with an eye toward the aesthetics of the final rehabilitation project. New windows and doors may significantly alter the building's visual appearance and architectural character through changes in materials, size, configuration, or color. Uniformity of fenestration, particularly on the same facade, seems critical.



Replacing sash with divided lights requires special attention to the design of integral muntins, particularly needed strength to carry the increased width of insulating glass and increased width required to cover the glass spacer.



Nonstructural muntin systems are typically fixed or removable grilles intended to simulate glazing divisions in sash equipped with insulated glass.

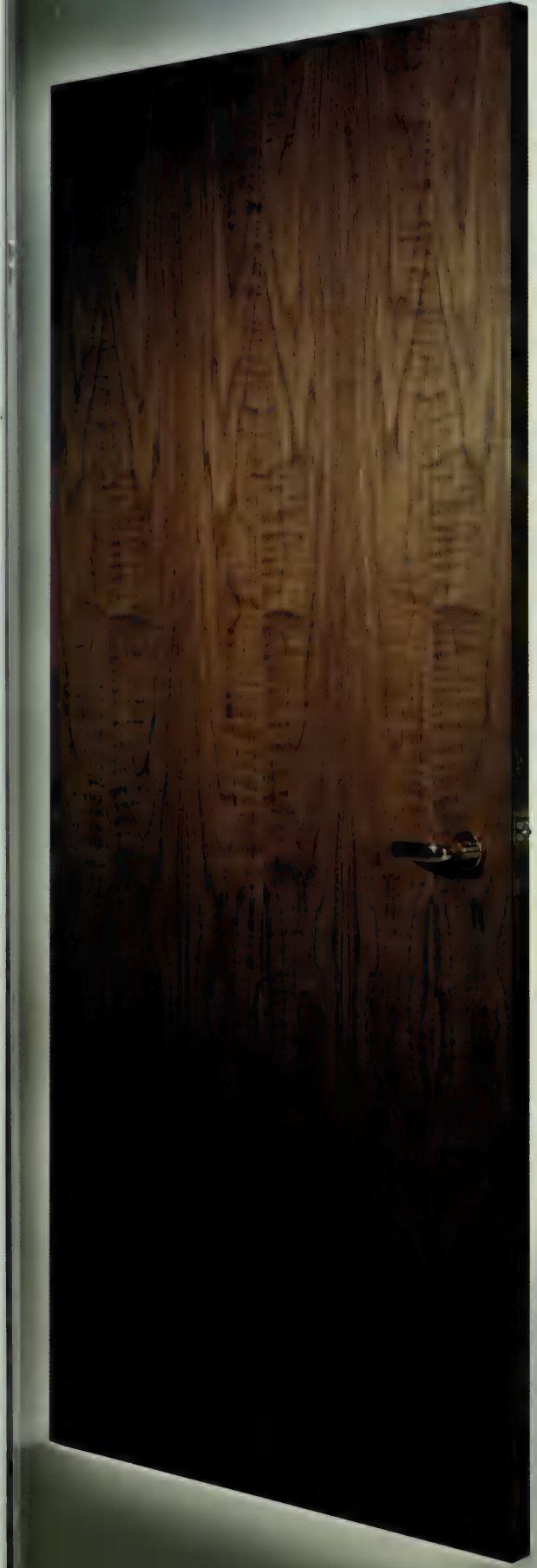
Obviously, if windows are missing or severely deteriorated, replacement will be necessary. The design of replacement windows is tricky and "offers all the challenges of new construction, and then some," suggest Louis and Schwartz. Proper design of replacement windows and doors can result in years of quality performance. Louis and Schwartz suggest:

- Investigate the problems associated with the windows and doors to avoid repeating mistakes the use of appropriate water tests is critical.
- Pay close attention to integrating the new windows and doors into the existing wall system.
- Off-the-shelf window assemblies from manufacturers may require modification to obtain the best results.
- Do not rely solely on sealants to keep water out of the building. Provide for the control of water that eventually bypasses the perimeter and corner sealants by using appropriate perimeter flashings.

Often, replacement windows and doors must incorporate special provisions to be integrated into an existing structure. Louis and Schwartz pose these questions regarding replacement windows, issues that can again be translated to door replacement: Should the frame be removed or encapsulated by the new system? Can the old frame be used as an anchor against wind loads? How much of interior finishes is desirable or economically and aesthetically acceptable? Overall, the following issues should be addressed:

- Structural—strength, stiffness, attachment, corner construction
- Air infiltration—through and around windows and doors
- Water penetration resistance—through and around windows and doors
- Integration with existing wall elements and finishes
- Expansion joints
- Energy use

Continued on p-172...



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CIRCLE 46 ON INQUIRY CARD

- Lighting needs
- Operability—operation and hardware
- Condensation potential
- Security—resistance to forced entry and fall-out protection
- Special features—louvers, vents, and panels
- Durability and maintenance requirements.

When planning a replacement system, take into account the installation process. Energy savings are only part of the payback formula. If a unit is poorly designed, built, or installed, any anticipated energy savings will quickly evaporate. Proper design, construction, and installation are factors that usually increase the unit's initial cost but greatly reduce its subsequent operating, maintenance and repair costs.

Also of importance are the material compatibility of the new product to the existing structure, and the visual characteristics of windows and doors in relation to the rest of the building. Of particular concern are those cases where not all windows and doors will be replaced. The integration of new units into a facade where some existing products will be retained must be done with great care. The dissimilarities among units may become strikingly evident and undesirable when placed side by side in a facade. In the case of partial replacement, then, wood windows and doors would most readily meet aesthetic requirements, as the majority of historic buildings have wood products. Replacement wood windows and doors, therefore, can closely replicate original appearances and at the same time meet contemporary energy conservation standards as well as air infiltration, water penetration, structural performance, and thermal conductivity requirements.

Replacing sash with divided lights requires special attention to the design of integral muntins. Replicating old muntins is not structurally possible if a heavier and deeper glazing system is used. Such systems usually require a minimum of 1 1/2 inches to provide a sound tenon and glazing rabbet deep enough to cover the insulated glass space. Adding an interior storm panel to a single-glazed unit with integral muntins, until recently a custom modification, is a way to maintain the structural integrity of slim muntins.

Wood Window and Door Replacement Schemes Are as Individual as the Building Itself

There is no one solution to replacing windows and doors in historic buildings, as no two historic buildings are alike. As the following illustrate, the strategies are unique to each building.

Camden Yards, Baltimore, Maryland

A former B&O Railroad warehouse sits next to the new Baltimore Orioles Stadium. Housing the stadium club and team offices, all 843 windows in the eight-story warehouse were replaced under the direction of HOK.



Washington County Courthouse, Tennessee

Custom-designed vertical muntins were added to stacked, standard new windows to match the original appearance of the courthouse through a scheme developed by Architect Joe Lusk.

Former Police Building, New York City

This 1905 building, a former police station, was converted to residential and commercial space. Ehrenkrantz & Eckstut chose a sash replacement scheme in which specially insulated glass storm units are separated from tempered glass windows by wide air space.

Hospital for Sick Children, Washington, D.C.

For this residential-style hospital, Shalom Baranes Architects chose a window replacement scheme.



Monadnock Building, Chicago

The deteriorating original doors at the Monadnock Building were replaced—more than 400 of them. John Vinci worked with a local company to create doors that matched the originals.

Ellis Island Immigration Museum, New York Harbor

While the windows in the Registry room—the building's main showcase—were faithfully restored, other windows were replaced with replicated versions with improved thermal and light transmission characteristics in a scheme developed by Anderson Notter Finegold and Beyer Blinder Belle.

Pittsburgh's Carson Street Historic District

New wood replacement sash, shutters, storefront windows, and doors helped bring a revitalized Carson Street back to its historic appearance.

Continued on p-176...

Mastering the Fine Art of Color

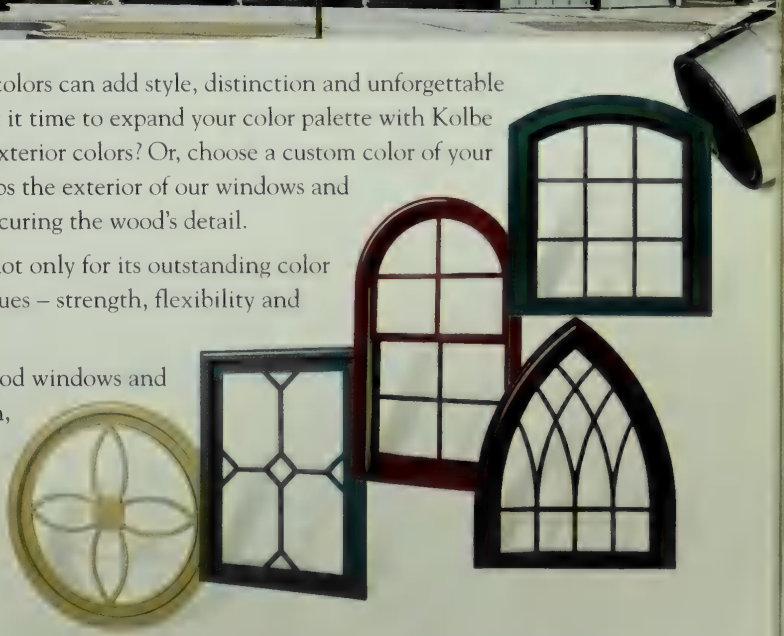




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CIRCLE 48 ON INQUIRY CARD


JE EXPOSURE
KIDS / GUEST
LAKE VIEW
SCREENS?



The Young Apartments, Los Angeles

Cavaedium Architects used the existing window frames and put in new sash fitted with laminated glass for sound control since the building is next to an on-ramp for the Santa Monica Freeway.

The Riverheads, N.Y., Schools

For the rehabilitation of two elementary schools in the Riverheads, N.Y., 600 new double-glazed, argon-gas-filled windows were created that matched the profile of the existing units. Key to the new windows was a unique aluminum panning system that covers the existing frames and into which the new windows were installed.



N Street Village, Washington, D.C.

This housing project for the former homeless consists of four renovated townhouses connected to new housing, under the direction of Shalom Baranes Architects. The windows in one townhouse were restored; the rest were replicated to match.

Former Police Station, New York City

This 1905 building, a former police station, was converted to residential and commercial space. Architect Ehrenkrantz & Eckstut choose a sash replacement scheme in which specially insulated glass storm units were separated from tempered glass windows by wide air space.

Modeled integral and thinner applied muntins, complete with exterior putty lines, and a broadening vocabulary of molded pane systems and interior trim, are now available Pane systems, applied directly to the wood frame, require a thinner extrusion, and have been tried out but with limited success. The impact of the reduced sight line is minimized in one-over-one units that have been installed in monumental openings with deep reveals.

It's important to assess replacement systems as to the life-cycle costs. An investment in a quality system that may initially cost more can prove less expensive in the long run, as the lower cost of buying and installing a nonquality system will be offset by the subsequent higher costs of maintaining, repairing, and replacing the system.

Wood Window and Door Replacement Checklist

The New York Landmarks Conservancy offers a checklist of what to look for in a replacement window, which we have supplemented to include replacement wood doors. It's important to examine the performance standards of a given window or door as to its air infiltration, water penetration, structural performance, and thermal conductivity. In addition, standards are available governing weather-stripping, hardware, and finishes. It's generally the standards relating to energy and structural performance that affect a window's appearance, particularly the sizing of sash and frame members.

Operation. Does the original window or door operation suit your needs? It's possible, for example, to change a window's operation without substantially altering its appearance—and may be desirable to allow for easier cleaning. It is also possible to replace double-hung sash with single-hung sash, two-awning sash or a pivot sash.

Shape. How well does the replacement prodct fit within the existing opening? For windows, sometimes this is determined by how flexible a unit's construction can be. According to the New York Landmarks Conservancy, many stock window units sold as replacement units are comprised of modular parts that offer a limited range of predetermined sizes. To fit units into the old window slot, the size of the

Continued on p-178...

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opening can be reduced by installing fill panels or pane trim pieces, a process that will alter the window's appearance. Placement forward and backward in the existing slot is also an important consideration. Replicating windows in openings with arched heads or other unusual shapes usually requires some custom construction. Obviously, the better fit the window and door, the greater the potential for high energy performance.

Dimensions and proportions. Can the original design and detail be replicated in the replacement window or door? If not, how closely does the replacement unit replicate the original? For windows, replication of the sight line is particularly significant. A comparison between wood, metal, and vinyl units reveals that wood windows require minor added mass to carry insulating glass, compared to the other two.

Glazing subdivision. Does the replacement window or door replicate the glazing division of the original? And, for windows particularly, is that desirable given the high cost of customizing windows to produce that same glazing subdivision? Although replacement units are available with structural and nonstructural muntins, the New York Landmarks Conservancy suggests "the former are preferable, both structurally and visually.... When equipped with insulating glass, exact replication of the muntin profile is limited to windows originally containing larger muntins, because an increase in the width and depth of the muntins and in the depth of the sash is required. Nonstructural muntins are available as applied interior, exterior, or combination grids."

Trim. Is the replacement compatible with interior or exterior decorative finishes? Interior wood trim with molded profiles is obtainable in stock profiles that blend with original details.

Color and finish. What colors are available and how will they hold up?

Construction. How do stock and custom units compare? Choosing between stock or custom construction influences the accuracy of the replication, cost, and availability. More expensive, generally requiring a longer lead time, and sometimes with unknown insulation performance, custom windows and doors are more often used for strict rehabilitation and stock units for adaptive use projects. According to the New York Landmarks Conservancy, "how well the unit is put together has even greater cost implications in the long run" affecting the overall performance and long-term durability of a replacement unit.

Two types of stock window units are available today—those built of modular parts to predetermined sizes and those built of standard parts, sections, and extrusions that are adaptable to the size of the opening. Due to increased demand, manufacturers offer much more variety in sizing and shapes than they did a decade ago.

The New York Landmarks Conservancy suggests the following regarding the window construction. "Wood joints should be interlocking, either mortise-and-tendon construction of finger jointing. Joints should not depend on staples or nails for tightness because these corrode and loosen over time. Surface planes of adjoining sash and frame stiles should be flush and tightly butted, with all end grain protected from exposure.

It is also important to select a rot-resistant species or make sure proper fungicidal treatment is provided. The durability of operating mechanism and hardware is also an important consideration.

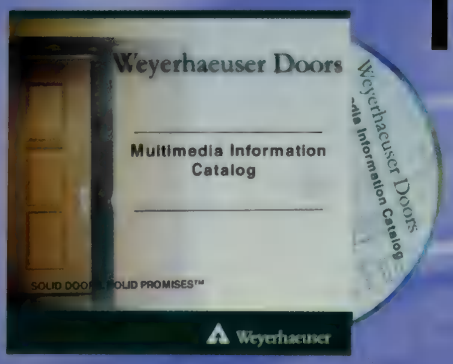
Extent of replacement. Will all or just some of the units be replaced? For windows, how does partial and complete unit replacement compare? It's important to know what options are available as one conducts a needs assessment. For windows, complete unit replacement can be considered brick to brick. It involves removing all existing sash and frame parts and nearly always requires additional removal of interior trim. The replacement unit is then positioned, wedged in and caulked in place and interior repairs made. Partial replacement ranges from sash replacement using the existing frame to no-tear-out units that cover the existing frames. Sash replacement usually requires some repair and reworking of the frame to receive new weather-stripping and may also require the reconfiguration of stops and balances or installation of jamb liners. No-tear-out-units reduce demolition and installation time.

Continued on p-180...

Checklist for Replacement Wood Windows and Doors

1. *Operation:* **Does the original window or door operation suit your needs?**
2. *Shape:* **How well does the replacement unit fit within the existing opening?**
3. *Dimensions and proportions:* **Can the original design and detail be replicated in the replacement window or door? If not, how closely does the replacement unit replicate the original, particularly in terms of sight line? Is near replication important to the project?**
4. *Glazing subdivisions:* **Does the replacement unit replicate the glazing division of the original?**
5. *Trim:* **Is the replacement compatible with interior and exterior finishes?**
6. *Color and finish:* **What colors and finishes are available and how durable are they?**
7. *Construction:* **How do stock and custom units compare?**
8. *Construction details:* **How well is the replacement window or door made?**
9. *Product testing:* **Can you expect the replacement window or door to perform as well as expected?**
10. *Extent of replacement:* **How does partial and complete unit replacement compare, particularly for window units.**
11. *Quality control:* **How well will the window or door be installed?**
12. *Durability:* **How durable will the window or door be?**
13. *Maintenance and repairs:* **What kind of maintenance will the window or door need? How difficult will repairs be?**

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Divergent Architectural Wood Flush Door Standards May Cause Confusion For Architects

The National Wood Window and Door Association has expressed concern that the recent issuance of two different standards for architectural wood flush doors will cause great confusion among the architectural community. NWWDA contends that important aspects of the AWI standard are in conflict with the new NWWDA standard IS 1-A.

Under contention is AWI's definition of a "premium" grade door. The new AWI standard requires balanced or center-matched "AA" grade face veneers for premium grade doors. "This grade change is totally unrealistic in light of the availability of such veneers in the market," NWWDA President Alan J. Campbell maintained. "It forces the customer to pay a significantly higher price for their doors. Beyond the cost issue, a balanced veneer requirement places a greater strain on our natural resources because this process actually reduces the veneer yield. Furthermore, customers will probably be faced with extended deliveries because AA grade veneer will have to be accumulated over a period of time in order to produce enough veneer for a standard size project."

The NWWDA IS 1-A-97 standard recognizes three grades of doors—premium, custom, and economy. Premium grade is defined as "the highest grade commercially available in both material and workmanship. This grade is intended for the finest commercial, industrial, and institutional buildings, and is differentiated from custom primarily in the appearance of vertical edges, balance and center matched faces, and pair or transom face matching."

Another point of departure between the two standards is related to the use of structural composite lumber (SCL). The AWI standard allows the use of it for rails on custom grade doors, but not on premium grade, as a viable stile back material and as a substitute for stave lumber core. NWWDA has endorsed the use of structural composite lumber for stile backs, rails and also as a completely new category of door core in all grades.

"Once again, this requirement to use mill option hardwood on rails in premium grade doors places an unnecessary cost burden on customers," Campbell said. "This requirement is totally out of step with an environmentally sensitive approach to our natural resources."

NWWDA also points out that the new AWI standard does not rate waterborne finish systems as premium grade. "In fact," Campbell said, "AWI includes some veiled references that such systems may contain hazardous air pollutants and warns of assuming responsibility for inherent risks. NWWDA researched this issue and we are completely comfortable with this finishing process."

NWWDA Standard IS 1-A-97:

Issued in 1997, Standard IS 1-A-97 is meant to be a general industry standard providing quality levels for the construction of architectural wood flush doors. "Function, performance, and aesthetics are combined in producing a wood flush door for a particular opening," the standard suggests. "Function and performance are primarily controlled by the wood door construction. Aesthetics are primarily controlled by species, veneer cut, matching of veneers and finish selected, or by the laminate selected."

The NWWDA standard is to:

- Define, in exact terminology, the grades of architectural wood flush doors available.
- Provide general information, standards, and tests that ensure all products comply with this standard can be evaluated on an equal basis.
- Provide a logical, simple system of reference specifications, keyed to guide specifications, that enable the architect to specify wood flush doors thoroughly, precisely, and accurately.
- Provide information necessary for the owner's representative to properly determine whether or not there has been compliance with this standard. The responsibility for determining quality compliance rests with the owner's representative. A review and approval, by the owner's representative, of all details and submittals for compliance is essential.
- Applies to architectural wood flush doors for interior application.

The NWWDA Standard IS 1-A-97 replaces the earlier architectural wood flush door standard to reflect the latest technical and material aspects of the architectural flush door industry. For the first time, the NWWDA recognizes structural composite lumber as a core material—in 3-, 5-, and 7-ply construction. NWWDA suggests that use of composite lumber offers further protection against warping and telegraphing.

The traditional bonded and non-bonded interfaces between the core and vertical and horizontal edges is offered. The appearance of the different cuts of face veneer is well illustrated to assist the specifier, as is the matching of face veneer between pieces. The way in which a log is cut, in relation to its annual growth rings, determines the appearance of veneer. The beauty of the veneer is in the natural variations of texture, grain, figure, color, and the way it is assembled on a door face.

The face veneer characteristics have been updated. For example, plain sliced and rotary dimensions have been reduced by one inch, yet allow for greater widths. This decision was partially based on the diminishing supply of wood for veneer. The characteristics of several types of wood are offered—ash, birch, maple, poplar, walnut, cherry, African and Honduras mahogany, red and white oak, pecan and hickory. In addition, construction details, beveling and glazing options are listed. NWWDA will begin the ANSI approval process for this new standard in early 1998.

An entire section is devoted to understanding and describing finishes. And the section illustrating the dimensions, crossbanding, and core requirements have all been reviewed for clarity.

At A Glance: 'AA' vs 'A' Grade

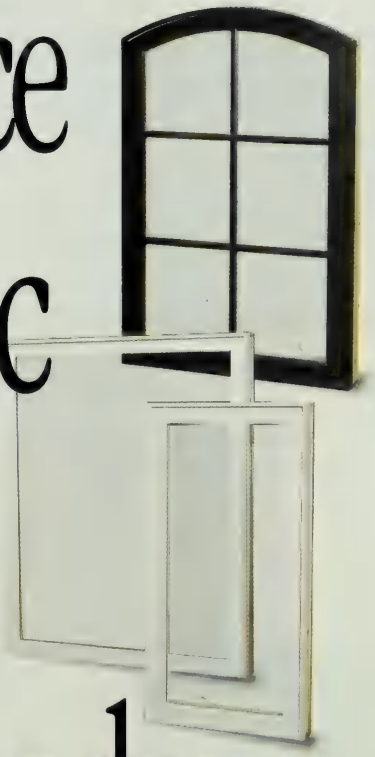
'AA' Grade:

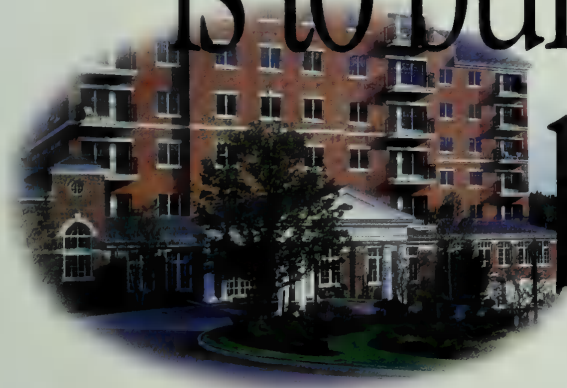
- **Increases cost significantly**
- **Reduces veneer yield**
- **Places strain on natural resources**
- **Extends deliver time**

'A' Grade:

- **Available at a reasonable price**
- **Optimizes veneer yield**
- **Allows responsible use of limited natural resources**
- **Maintains reasonable delivery time**

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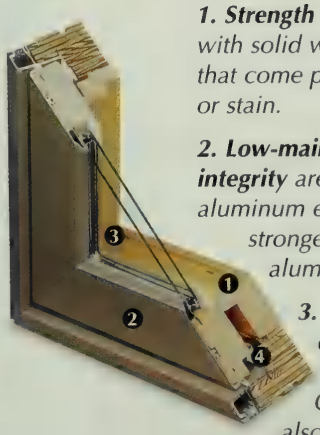




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CIRCLE 51 ON INQUIRY CARD

Learning Objectives

After reading *Replacement Wood Windows & Doors Renew the Life of Old Buildings* and completing the following exercise, you will be able to:

1. Contrast today's windows with those found in historic buildings.

2. List at least ten key elements to consider when evaluating windows and doors.

3. Identify a change to NWWDA Standard IS 1-A-97.

Questions

To earn two continuing-education credits through the AIA/ARCHITECTURAL RECORD Continuing Education Series, check your answers against those provided below and return the self-report form as indicated on page 248.

1. What are the structural implications of replacing historic windows with high thermal performance windows?

2. Develop a short checklist for assessing windows and doors during historic building alterations.

3. List a particularly important aesthetic to keep in mind when replacing an external door.

4. What are two solutions to sizing integral muntins when replacing sash with divided lights?

5. Identify major reasons for specifying costly door replacement.

6. What is the position of the NWWDA Standard IS 1-A-97 regarding core material for wood flush doors?

Answers

1. The size of window muntins may dramatically increase to provide a stronger structural system for heavier window panes. This translates into a thicker window sash than found in the historic building and requires alteration.

2. Check seasonal heat loss and gain, location, paint, frame and sill, sash, glazing, hardware, overall condition including integration, and review documents and complaints.

3. Uniformity of fenestration is particularly important on the same façade to avoid significantly altering the building's visual appearance and architectural character through changes in materials, size, configuration, or color.

4. Affixing an interior storm panel to a single-glazed unit with integral muntins, not necessarily a custom modification, maintains the structural integrity of thin muntins. Also, consider using nonconductive but easily machined materials that are stronger than wood; modeled integral and thinner applied muntins, complete with exterior putty lines, and a broadening vocabulary of molded paning systems and interior trim, are now available.

5. Justification can be built on improved performance, greater insulating efficiency, reduced sound transmission and over the long term, a quality system may lower the costs of maintaining, repairing and replacing less expensive systems.

6. NWWDA Standard IS 1-A-97 now recognizes structural composite lumber as a core material in 3-, 5-, and 7-ply construction.

For Self-Report Form, Turn to Page 248.

CIRCLE 52 ON INQUIRY CARD

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CIRCLE 53 ON INQUIRY CARD



LIGHTING...

The recent passing of Edison Price, the renowned inventor of lighting products and founder of the extremely successful and well-respected Edison Price Lighting corporation here in New York City, reminds me that while pioneers in lighting sciences come from all kinds of backgrounds, the best of them love light and what it can do for people. And they love sharing their knowledge with others. Lighting designer Craig Roeder wrote that when he started out in the business 20 years ago, he used to wander up to Price's studio with a problem or question. Anticipating that he would spend a few minutes quizzing the master of lighting optics, Roeder usually ended up spending hours watching demonstrations of principles that some might consider arcane but that Price felt every lighting designer ought to know: the geometry of reflectors, for instance, or the intricacies of spread lenses. Price's inventions or innovations in lighting technology can be seen in virtually every museum, art gallery, and modern office building in the world.

We still have people in our midst who love to share what they know about lighting and use it to improve our lives. Peter Erskin, a sculptor based in Venice, California, whose latest work is for a shopping mall (featured on page 201), is one such individual. Erskin designs and builds huge machines that break sunlight into its pure spectral components and pour it over people, surfaces, and anything else in its path. The machines themselves are not Erskin's sculpture; rather, the sculpture occurs in the play of the colored light on objects and architecture. Erskin says, "As has happened so often in the 20th century, this new art came from taking something that was used in one context and putting it to a new use." The tracking mirrors that follow the sun in his latest work, Sundance, *are borrowed from the oil industry; the flat prisms are used in astronomical instruments. Erskin's work is not unlike something Edison Price might have done insofar as he takes ordinary objects out of context to create an entirely new and extraordinary synthesis.*

Professor Moji Navvab, of the Department of Architecture and Urban Planning at the University of Michigan, has a less fanciful goal. Like Erskin, Navvab predicts the behavior of the sun and harnesses its rays, but he is working to control light so that great works of art can be viewed under optimal conditions without being overexposed to harmful light (see page 210). Navvab has researched a number of ways to predetermine what the sun's impact on spaces will be over the years, including scale-model photometry and computer imaging. His latest work involves using a video camera to scan a model and special software to determine the characteristics of the sunlight as it falls within the spaces represented by the model. I don't always understand exactly what Navvab is saying about his new technology, but every time we talk, I get a kick out of thinking that the age of the lighting enthusiasts—people who are constantly looking for a new or better way to work with light—didn't pass with Mr. Price.—Charles Linn, AIA

187 **Lighting Observations**

191 **Skylights Let Sun into Dark Heart of Johnson & Johnson Building**
The Lighting Practice

195 **Bright GM on 5th Showroom Takes Visitors on Fantastic Road Trip**
Haverson Architecture and Design

201 **Diffracted Sunshine Creates Spectacular Display at Puente Hills Mall**
Gallegos Lighting Design; Peter Erskin, solar artist

205 **Lincoln Looks Best Basking in Incandescent Glow**

208 **Motion Sensors Come into Their Own**

210 **Designing Daylighting Systems for Art Museums**

213 **Lighting Resources**

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CIRCLE 54 ON INQUIRY CARD

CREATIVE USES

LANDMARK SEOUL SHOPPING MALL BRUSHED WITH BRIGHT LIGHTS

Assaulted by the crush of steel, glass, and neon that is Seoul at night, the Galleria, in its classical grandeur, has managed to hold its own. In fact, this exclusive shopping center with the glowing facade has become a landmark in the bustling, crowded metropolis of 10 million people. It's also a favored nighttime backdrop for local soap operas, according to Craig Roeder, whose Korean firm Ener Ken designed the new facade lighting.

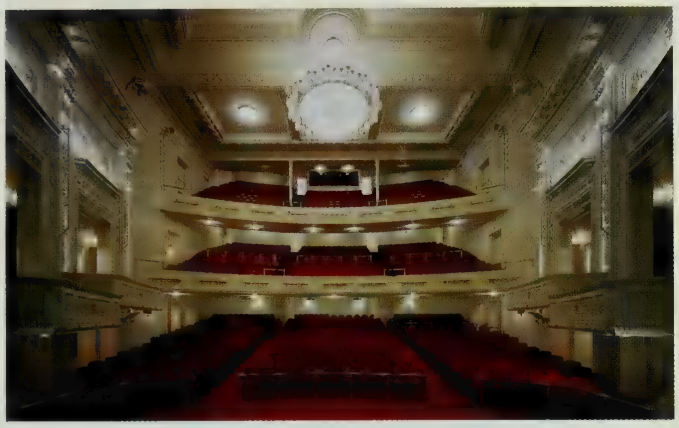
The Galleria is an elegant 1920s building that houses high-end shops such as Hermès and Escada. During a facelift of the building, the owners spent a major portion of the refurbishing budget on lighting the exterior. Roeder, with his partner, John Robertson, concentrated on using light to articulate the architecture and fenestration of the building. "It was a gorgeous piece of architecture to light," says Roeder.

The entire building has been lit with 3000K lighting, including newly available 3000K metal-halide lamps. Concealed in the overhang atop the building and on an intermediate ledge, 120-milliamp cold neon lights create the overall glow that defines the elevation. The lamps have been housed in custom fixtures manufactured by Ener Ken's Korean factory. Paints in several colors were mixed with sand before being applied to the lamps; as a result, the fixtures seem to recede into the building facade.

The entrance columns have been washed in deep blue to match the existing blue of the Galleria signage. They are framed with five 3000K, 150W 10-degree spots with dichroic blue filters. Tiny MR16 lamps with 11-volt custom transformers for low maintenance are installed on top of the entrance canopy.

"This is the first job we did with the help of the computer program Lightscape," says Roeder. "When we drew up the Galleria on the computer, we discovered that the lintels would cast a shadow on the wall." The solution was to add light above the windows, which Roeder accomplished by housing 400W clear quartz lamps in custom-designed aluminum fixtures, creating a striking sunburst above every window.





BOSTON'S SHUBERT THEATER SHINES ON

When lighting designer Josh Feinstein of Standard Electric's Lighting Design Group, in Boston, was working on a restoration of the Shubert Theater with architect Graham Gund, FAIA, he found himself in the midst of his own set of tryouts and auditions. "You can draw things and try to describe them," Feinstein says. "But sometimes I found it worked better to just take the lights, get up on a ladder or scaffolding, and show how they were going to work."



Much of the period lighting in the building—like the massive chandelier in the main house and the sconces in the corridors—was in extremely good condition and needed only to be cleaned, rewired, and relamped. "We discussed fluorescent sources with the owner, but he decided to continue to use incandescent light. It looks more period." In the main house (top) flush-mounted crystal chandeliers were added to the upper balcony ceiling to provide more light and visually balance the large existing chandelier.

To add ambient light to the output of the chandeliers, as well as emphasize the theater's architectural details and raise the brightness to a level contemporary audiences are accustomed to, Feinstein used three elements. AR111 narrow spots hidden in the box-seat walls graze the gold-leaf detailing on the pilasters. The gold-leafed laurel wreaths that decorate the panels above the box seats are cross-lit by 50W MR16 lamps fitted with frosted lenses mounted on the light ladders above. At the top level is fluorescent cove lighting: staggered strips of dual-circuit electronic T8 lamps are built into a box and covered with a black Alzak egg-crate louver to prevent glare. "They create a nice elevation and help with the spatial volume," says Feinstein.

The crystal pendant and semi-flush mount fixtures hanging in the foyer and over the stairs (above) are reproductions of period fixtures. At the columns supporting the stairs, Feinstein added bipin halogen lamps in two-inch quarter-round extruded aluminum to uplight the arched ceiling above. ■

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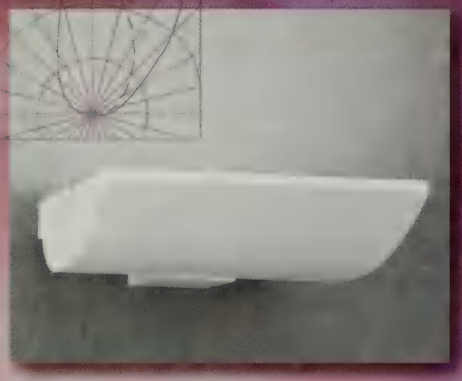


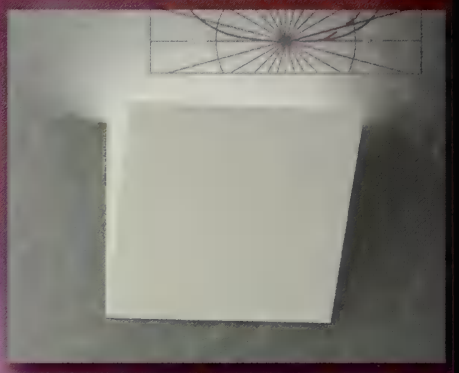
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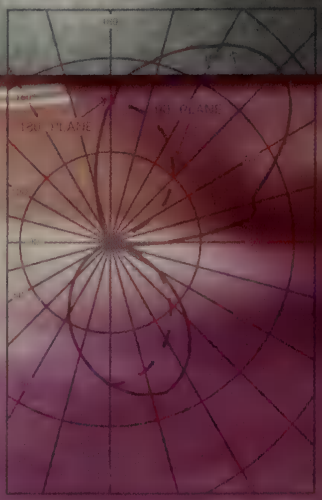






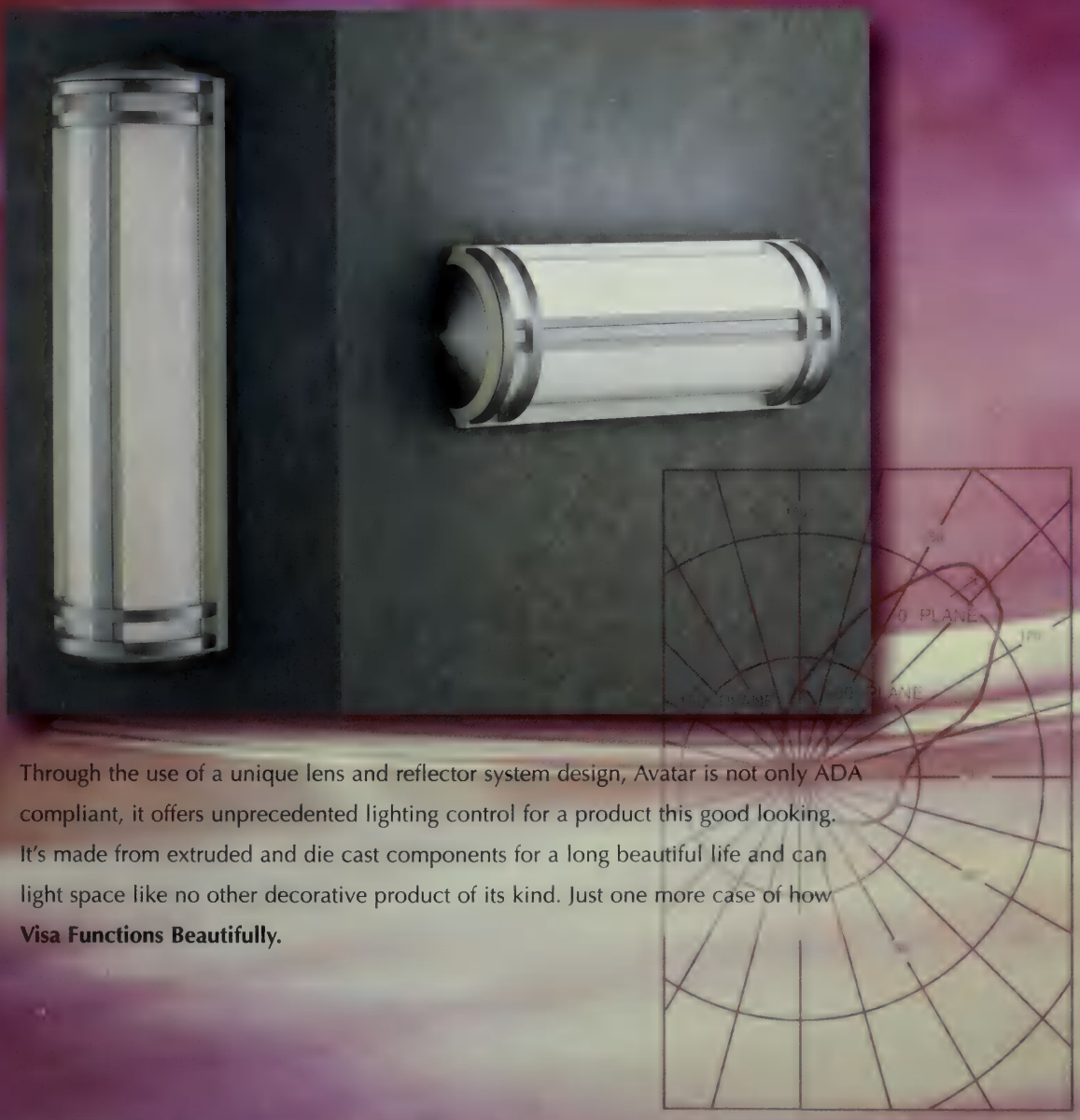






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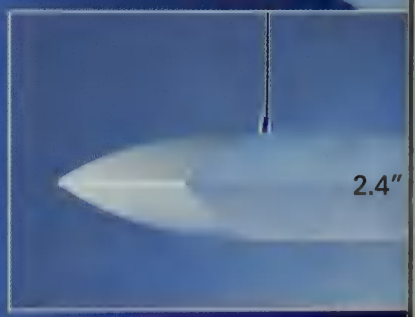


Crescendo was designed by Galina Zbrizher IALD, IESNA CCW, of MCW Consultants Ltd. in Vancouver, Canada

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Green Lights Ally

Skylights Let Sun into Dark Heart of Johnson & Johnson Building

by Nayana Currimbhoy

A 450,000-square-foot, single-story building that was once a rather anonymous diaper factory has been converted into the consumer products headquarters for Johnson & Johnson. The client brief was to create a comfortable office that would reinforce a sense of community. For the architects, the vast expanse of the interior was also an opportunity to create space on a grand scale that is not usually possible in the average office building, says Terry Steelman, AIA, design principal for the architectural firm Ballinger.

The success of the design lies in its manipulation of natural and electric light and its use of the building's volume. Given the vastness of the space, it was clear that a conventional perimeter office plan would not create a pleasing work environment; light would have to be injected into the center of the space. To accomplish this, the architects punched an elliptical skylight through the roof to form a large light-filled atrium that works as a central anchor in the facility.

The atrium serves as the building's primary orienting device. Large gatherings are held here, all circulation goes through the space, and the conference rooms and cafeteria lead away from the atrium. Other interior spaces are organized around a series of outdoor courtyards, which introduce still more daylight deep into the interior and give employees inside the building a connection to the outdoors, acting as a series of garden oases.

A glass-skinned box on the facade articulates the building's entrance. The visitor enters through this box, whose stippled-glass ceiling and walls glow with light. The entry procession then leads through a light-filled corridor to the atrium, and on to a concave, faceted passageway leading to the workspaces within. "The idea was to create the illusion that you're walking through the lobby toward an object," says Steelman. "It was conceived as an elongated jewel in a box."



A vast, one-story building that was once a diaper factory has been turned into a bright and congenial office building.

"The magic of lighting has been used to modify the psychological perception of the space," he continues. "Without the creative injection of light—both natural and artificial—the space would be just one big, featureless box."

Designed by the Lighting Practice, the lighting in the building articulates the interior spaces, orients the user, and differentiates public areas from workspaces. "We were working with a large amount of natural light and extremely high ceilings," says Helen Diemer, principal lighting designer for the job. "Ceiling heights range from 24 feet to as high as 28 feet, creating vast volumes of space. Our solution was to use indirect lighting. The daylight has been supplemented by recessing lights into floors

Owner: *Johnson & Johnson*
Project: *Consumer Franchise Worldwide Headquarters, Skillman, New Jersey*
Architect: *Ballinger*
Lighting Designer: *The Lighting Practice—Helen K. Diemer, IALD, principal lighting designer; Julie Panassow, associate*
Electrical Engineer: *Ballinger*

Nayana Currimbhoy is a New York City–based freelance writer who frequently writes about lighting and interior design. Her book on retail and restaurant design will be published this fall.



The client had a modest budget and a mandate calling for low maintenance, energy efficiency, and no incandescents. These goals were accomplished by using common catalog products, with only eight types of lamp. Indirect lighting in the lobby (left) and around the atrium (below) balances the daylight.

Triple-tube fluorescent downlights and indirect fluorescents in soffits can be found throughout the building—from the corridors to the cafeteria (opposite).









and walls to uplight the ceiling and create a pleasant, soft white effect." The lighting program also highlights the unusual geometry of the interior.

In the main lobby, wall-mounted semirecessed metal-halide sconces provide a uniform 20 footcandles at floor level, which balances the daylight streaming in through the glass entrance facade. A fluorescent pendant above the reception desk gives a sense of scale to the 24-foot-high space. From the lobby, the curved corridor leading to the atrium has been lit with T8 strip fluorescents with electronic ballasts. Recessed into a wall soffit, the fluorescents create a band of light that leads to the atrium.

Three light sources in the atrium provide a carefully balanced level of illumination. Modified gimbal rings house 100W PAR38 metal-halide lamps, which provide the downlighting. In order to minimize their visual impact, these fixtures have been mounted on the beams of the 28-foot-high skylight. Recessed into the floor, 3200K metal-halide uplights accentuate the columns that frame the atrium as well as the surrounding wood wall. End walls of frosted glass are illuminated from within by T5 fluorescent wall washers. Small-aperture, 3500K, 32W triple-tube fluorescent downlights illuminate the frosted-glass corridor walls to visually expand the atrium space and provide a balance with the daylight. At night, the lights reflect off the light-colored floor to create a pleasing glow around the atrium.

"WITHOUT THE CREATIVE INJECTION OF LIGHT—BOTH NATURAL AND ARTIFICIAL—THE SPACE WOULD BE JUST ONE BIG, FEATURELESS BOX."

The sequence of spaces at Johnson & Johnson is artfully articulated by soft, indirect light. It fulfills the client's requirement for a comfortable, memorable working environment while using energy-efficient lamps that are, for the most part, off-the-shelf. The building's pleasant interior is a striking departure from its humble origins. ■

Sources

Compact fluorescent track lights: *Halo*
Fluorescent downlights and wall washers: *Halo*
Metal-halide uplights: *Hydrel*
Metal-halide wall uplights: *Elliptipar*
Lamps: *Philips*
Metal-halide downlights: *Sterner*
Decorative fixtures: *Koch & Lowy, Artemide*

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Barbara Kristiansen, Lighting Designer
Light/Resource & Design, Inc., Rhode Island

Lighting designer Barbara Kristiansen knows the ultimate judge of her work is how well it functions. "I design within architectural and interior spaces to accent, reveal and illuminate. To me, dimming is crucial." Ms. Kristiansen also specifies Lutron lighting controls because of the quality of their technical support. "When you call with a question, you talk to an engineer; someone who can help you with even the toughest problems and give you *accurate* information. That's important to me and the electrical contractor."

Ms. Kristiansen also knows the importance of keeping her clients satisfied, so she appreciates the way "Lutron's aesthetic simplicity complements the surrounding environment" and how Lutron lighting controls save energy, extend lamp life, and add functionality to any location. As she says, "I know I can depend on Lutron. They're a superb company with a reliable, high-quality product. And for support – they really are the best I've found."

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CIRCLE 57 ON INQUIRY CARD

Bright GM on 5th Showroom Takes Visitors on Fantastic Road Trip

by Charles Linn, AIA





Using personal computers located in the main lobby (above left), visitors may "design" their own cars, choosing a brand, options, and colors. The original starburst light fixture still hangs here. The brightly lit showroom (above right) was once "invisible" after dark.

The General Motors Building, at 59th Street and Fifth Avenue in New York City, stands at the terminus of one of the greatest shopping streets in the world. Bergdorf Goodman and Tiffany's are a stone's throw away; FAO Schwartz is on the building's first floor; and the Plaza and Pierre hotels are within a block of the main entrance. Because there are so many attractions vying for the attention of visitors, luring them into a showroom—even to see Detroit's latest and greatest—is no small challenge.

Architect Jay Haverson's recently opened showroom, called GM on 5th, occupies the northern third of the General Motors Building lobby, and has been pulling in passersby in droves to view the automaker's new models. "On weekends the showroom has been getting about 3,000 people per day," Haverson says.

Haverson's job demanded that he have an understanding of demographics, a familiarity with recent lifestyle trends, and a sense of what might attract customers to a particular GM brand. "Brand recognition is critical for automakers. Most people aren't even aware that GM makes eight different brands," he says. "What is the real difference between a Buick and an Oldsmobile? Which brand is targeted at whom? To help us with the design, we actually built a matrix that cross-referenced lifestyle types with different models and brands." That led to the design of a showroom that uses an imaginary coast-to-coast road trip, complete with cleverly lit, interactive automobile displays that are memorable and informative in addition to being loads of fun.

The starting point of the journey and the centerpiece of the showroom is a reveal, a special circular stage. The most recent models are debuted for the automotive press here and then left on display for the public. A silver lamé curtain, which rises at the appointed moment, hides a car that rotates slowly on a turntable uplit by bright white neon. Footpads in the floor trigger informational messages, which emanate from Plexiglas domes overhead that keep the sound acoustically isolated from the rest of the room.

The road trip takes visitors over a rambling highway, which is really a set of connected ramps, on whose floor are backlit dividing stripes that flash in sequence to indicate the direction of travel. The highway takes viewers past a series of vignettes, each of which features a different vehicle. Each display is like a miniature stage set equipped with accent lighting appropriate to the theme.

Visitors are encouraged to sit in each car, where video displays may acquaint them with a given model's attributes. In some cases, the car

Project: *GM on 5th Showroom, New York City*
Owner: *General Motors Corporation—Joe Meagher, project director*
Architect: *Haverson Architecture and Design—Jay Haverson, principal-in-charge; Carolyn Haverson; David Jablonka, project manager; David Jimenez, project architect; Lisa Bianco, interior designer*
Lighting Designer: *Joe Kaplan Architectural Lighting—Joe Kaplan, partner-in-charge; Christopher Coe, project manager*
Engineers: *MGJ Engineering (electrical); M. G. McLaren (structural)*
Scenic Fabricator: *Showman Fabricators*
Construction Manager: *Structure Tone*



itself may deliver a message, such as a reminder to children of the importance of seat belts. One car's display uses a hidden camera to put visitors in the middle of a wide-screen action movie—a slightly unsettling effect to the unprepared.

The first stop, directly inside the showroom entrance, features a likeness of the entry canopy of the Plaza Hotel, complete with the appropriate luxury car—a touring sedan or a sports utility vehicle. The canopy is backlit by a row of exposed lamps and has a period lamppost fitted with glass globes, not unlike the lights outside the real Plaza.

GM ON 5TH ISN'T REALLY A SHOWROOM—IT'S MORE LIKE A ROAD TRIP.

A display for a "ready to go" car is placed in front of a garage door, grazed with floor-recessed uplighting, and surrounded by sporting goods. A re-creation of the George Washington Bridge includes red warning lights at the tower and exposed blue incandescent lamps that outline the suspension cables, reminiscent of the mercury vapor "string of pearls" mounted on the real bridge. For a trip to the mountains, scenic designers built an artificial forest, whose leafy canopy is created by a theatrical projector backlighting a frosted-plastic panel mounted overhead.

Most of the illumination on the cars comes from theatrical lighting mounted on overhead trusses; ambient light comes from existing architectural downlights recessed in the ceiling. Both systems are connected to the same central dimming system, which has 216 circuits and 14 preset levels.

All of the superstructure for GM on 5th "floats"—it's modular so that it can be reconfigured, and it isn't permanently attached to the building. "This is a good way of allowing different vignettes to be changed without having to shut the space down for a long time," says Haverson. "After all, market segments do change. And, obviously, car models change constantly." ■

Beyond the rear deck of a new concept car (above) are vignettes of the Plaza Hotel entrance, the George Washington Bridge, and a forest overhead. A rotating reveal is in the center.

Sources

Transom and guardrail lights: *Celestial*
Uplights: *Hydrel*
Red warning lights: *Hubbell*
Backlit ceiling and floors: *Duratran*
Base reveal lighting: *Warm white and bromo-blue neon*
Marquee downlights: *Halo*
Floor lighting on ramp: *Bega*
Flag lighting: *Lightolier*
Dimming system: *Colortran*

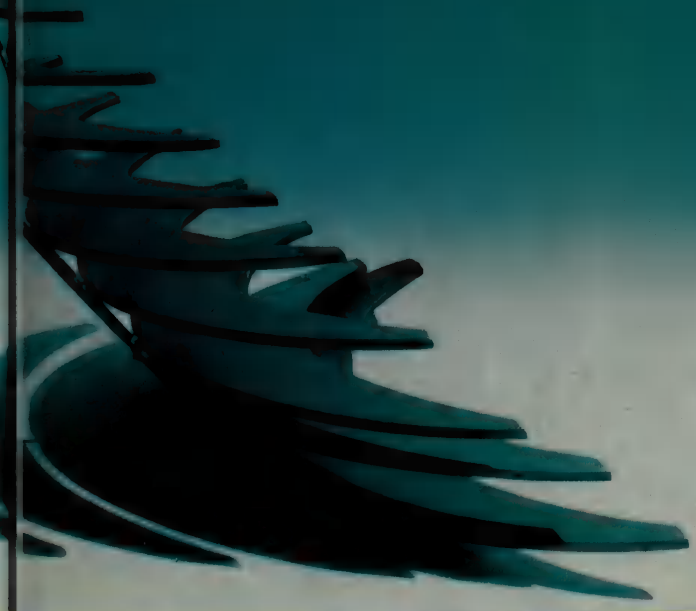






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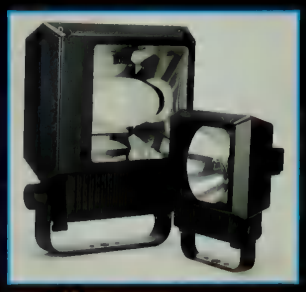
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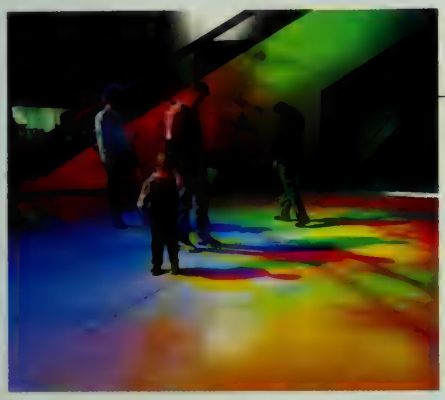


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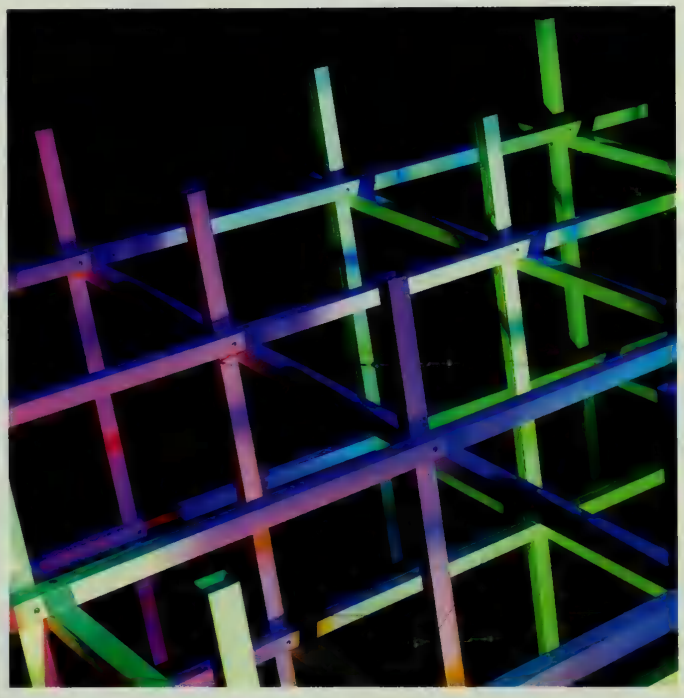
CIRCLE 59 ON INQUIRY CARD

Diffracted Sunshine Creates Spectacular Display in Puente Hills Mall



Children and adults alike are captivated by the large fields of color produced by sunshine bouncing off huge prisms. A grid (right) hung from the ceiling catches more rays.

by Charles Linn, AIA



When the owners of Puente Hills decided to demolish a huge, empty department store and anchor their mall instead with a 20-screen cinema, architect Todd Stoutenborough, AIA, had to determine how to turn moviegoers into mall walkers. In addition to designing the theaters, he was asked to create a transitional space between what remained of the mall and the new theater lobby. The space had to be visually stimulating and memorable—compelling enough to coax people out of the lobby and into the mall for shopping.

"When we started looking at different ways to work with the space," says Stoutenborough, "like installing a dome in the roof and a garden below, everything we tried was way beyond our budget. We had to accomplish so much for so little money, we actually code-named this part of the project Smoke and Mirrors."

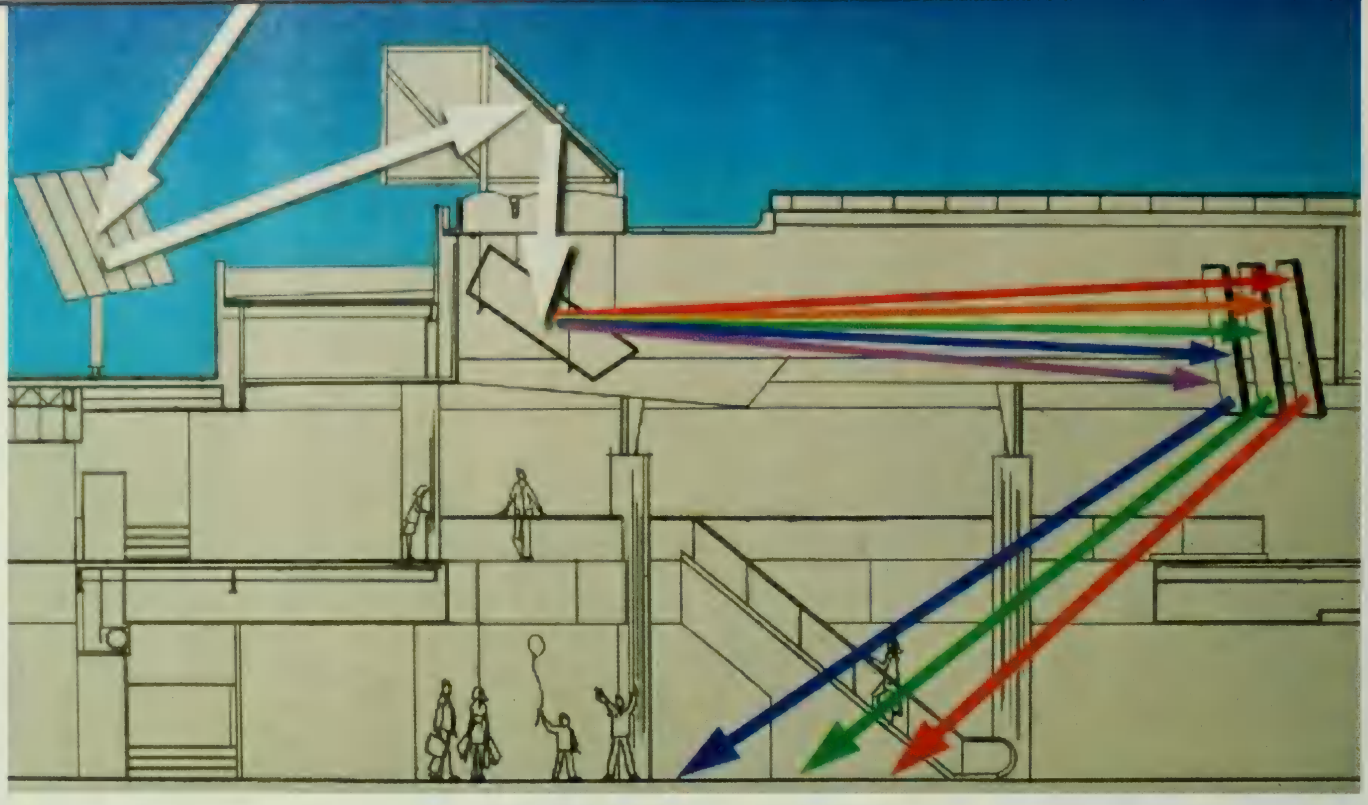
At the suggestion of a colleague, Stoutenborough looked up Peter Erskin, a sculptor from Venice, California. Erskin had previously used sun-tracking mirrors, or heliostats, and prisms to produce rainbowlike light for sculptures in Rome and Berlin. "We weren't sure that the idea would work at the mall at first," says Stoutenborough. "But after we looked at all the alternatives, we estimated that this could be done for a fraction of the cost, so we decided to try it."

"I was given drawings of the space," says Peter Erskin, "and pretty-much carte blanche to make the sculpture work as well as possible. We built a one-inch scale model that was about four feet by eight feet and experimented with a miniature solar tracker to help establish the traffic patterns and where the escalators would go." Adds Stoutenborough, "The only restriction is that by the time we got to this stage, the structural steel had already been ordered, so we were kind of limited as to where we could put the machines."

Erskin's optical machines create sun sculptures by tracking the sun and bouncing its rays onto a prismatic sheet that breaks the light into the spectrum. The rainbow of colored light is then projected onto the surfaces of a building, such as the escalators and floor around the lobby at Puente Hills.

The computer-controlled heliostat at Puente Hills is a modification of a design Erskin originally developed for the petroleum industry to run steam generators in the desert. For the machine at the mall, a 16-by-20-foot panel of mirrors is directed at the sun; the mirrors are positioned by a pair of motors, one on the x-axis and one on the y-axis, with respect to latitude and true north. Once the heliostat is set up, a computer instructs the motors to move wherever necessary to bounce the sunlight from the mirrors to a periscope mirror, adjusting their position every 20 seconds by as little as 1/300 of a degree. The periscope mirror throws the light down through an opening in the roof onto several flat, laser-cut prisms.

Project: *Sundance at Puente Hills Regional Mall, City of Industry, California*
Owner: *The Krausz Companies—David Pyle, developer and project consultant*
Architect: *Stoutenborough Architects and Planners—Todd Stoutenborough, AIA, principal-in-charge; Joel Greer, project manager*
Solar Artist: *Peter Erskin Studio—Peter Erskin; Kima Wakefield, project architect; James Sullivan, fabricator and installation manager*
Lighting Designer: *Gallegos Lighting Design—Pat Gallegos, principal; Karl Haas, project designer*
Engineers: *ANF Associates (structural); RWR Pascoe (electrical)*
General Contractor: *Rudolph + Sletten*







A 16-by-20-foot panel of mirrors (far left) tracks the sun, adjusting position every 20 seconds to keep the rays focused on the solar periscope (left), which bounces the light through the mall's roof. The heliostat's motors are controlled by software that predicts the sun's coordinates.

"When the light is finally spread out into the spectrum," says Erskin, "it falls onto a flat prism, which is made of a film that has been scored with a laser to create parallel microscopic lines the size of a wavelength of light—from 200 to 2,200 lines per millimeter. It's the same material that is in the spectroscopes that astronomers use to analyze atmospheric gases. The number of lines per millimeter depends on the spread of color I'm looking for."

To make a prism, the grooved film must be mounted on a surface that is optically flat—usually a glass or polymer sheet. In this case, Erskin and Stoutenborough mounted the film on flat structural sheet-metal plates, because glass or polymer sheet would have been too cumbersome, weighing hundreds of pounds. Two of the prisms at Puente Hills are 8 feet by 8 feet; another is 8 feet by 16 feet, and, according to Erskin, may be the largest prism in the world. An 18 foot by 18 foot mobile suspended below the mirrors (previous page) catches rays of light where they would otherwise be missed.

As the project was finished, the sobriquet Smoke and Mirrors was supplanted by *Sundance,* which the designers adopted after watching children dance in the colored light. At night or when clouds cover the sun, a computerized light show by Gallegos Lighting Design fills in for the natural spectacle created by the heliostat.

And why is the experience of seeing *Sundance* so appealing? Erskin has his theories. "Jonas Salk," he says, referring to the American physician who developed the polio vaccine, "once told me that the colors of the solar spectrum evoke a strong response in people because the rainbow connects us to a very core, evolutionary experience." And so it seems, judging from the newly leased spaces and packed matinees, that *Sundance,* with its light in elemental hues, speaks directly to the souls of one city's mallgoers. ■

Sources

Solar tracking hardware: *Peter Erskin Studio*

Theatrical light fixtures: *Clay Paky*

Pattern projectors: *Electronic Theater Controls*

Dimming and control system: *Electronic Theater Controls*

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CIRCLE 15 ON INQUIRY CARD

Study Finds Lincoln Looks Best Basking in Incandescent Glow

by Charles Linn, AIA

The National Park Service is nothing if not thorough when it comes to the preservation and care of our national monuments. That's what Einhorn Yaffee Prescott Associates' lighting specialist Dan Zuczek learned when he undertook a study for the Park Service to relight the Lincoln Memorial in Washington, D.C. Ordinarily such studies call for energy studies, computer simulations, and mock-ups, as Zuczek's did. But few require in-depth research into the nature of insects' vision, a fascinating aspect of Zuczek's research and proposals for lighting the memorial, which are, at this point, still proposals.

The Park Service gave Zuczek a number of specific goals for his study of the interior lighting. His mandate was to look at different possible lighting scenarios that would respect the intent of the original lighting design; to preserve the fabric of the building; to improve the visibility of the inscriptions and murals on the interior; and to improve maintenance and energy efficiency.

THE MEMORIAL IS A POPULAR DESTINATION FOR SHUTTERBUGS AND BUGS ALIKE.

The existing lighting for the statue of Lincoln was installed in the 1920s when the memorial was opened. These huge, old-fashioned lamps, which operate 24 hours a day, are short-lived and inefficient. "And," says Zuczek, "the old fixtures are mounted behind big metal louvers that don't look so good." The entire roof structure is a skylight, and the ceiling below it is made of translucent marble panels. For most of the day, light filters down through the panels and illuminates the whole space.

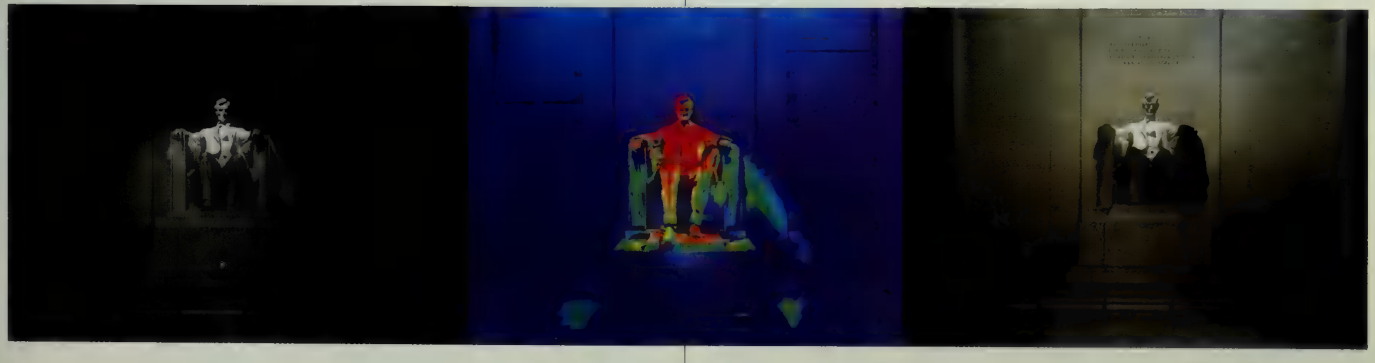
"There is a history lesson here," says Zuczek. "Originally, there was no lighting. The daylight filtered down, bounced off the marble floor, and uplit the statue. It was like holding a flashlight under Lincoln's chin, and it seemed to give him a surprised look. But sculptor Daniel Chester French wanted Lincoln to have a contemplative look. He lobbied to have lights added."

Zuczek hoped that focused beams could be used to light the statue, and that perhaps the metal louvers could be replaced with marble panels that would match the surrounding area. The panels would be drilled to accept the fixtures. Zuczek and a computer consultant used lighting simulation software called Lightscape to help make preliminary fixture choices, estimate fixture positions, and produce renderings and printouts of illumination levels. "We knew we had to do mock-ups eventually," says Zuczek, "but you can't just mock up everything you think of. It's expensive and time-consuming."

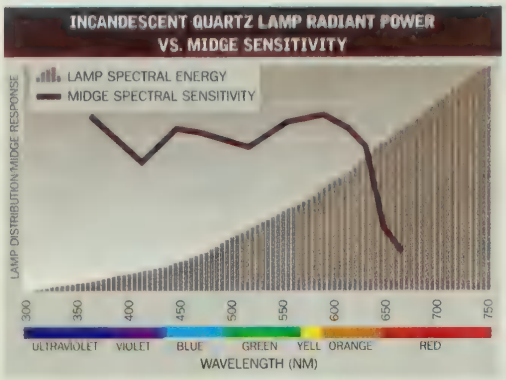
The range of lighting types—incandescent, metal halide, and high-pressure sodium—was limited, and Zuczek wanted the statue to be lit with a theatrical projection fixture. "During the day, the intensity of the electric light has to be high enough to overcome the daylight, but at night, the light level can be decreased greatly. We recommend incandescent here because it is easy to dim." The final proposal is similar to the mock-up shown below right, except that besides the light on the statue, only the center panel behind Lincoln is lighted.

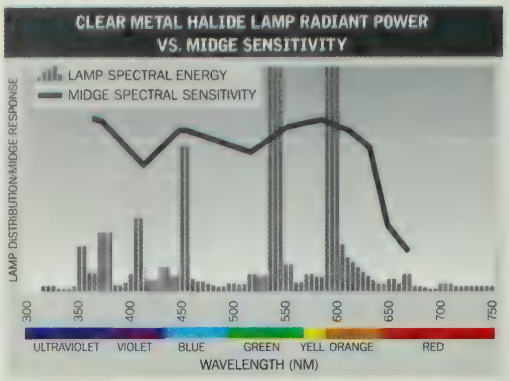
Prior to Zuczek's study, the murals on either side of the statue had been restored, although they were still poorly lit, as were the accompanying inscriptions. Improving the lighting should have been a run-of-the-mill, no-fuss task, but the restorers ended up coating the murals with a very glossy finish that caused veiling reflections. "It's just like lighting a mirror," says Zuczek. The people who restored the murals suggested that putting polarizing gels over the lights would substantially reduce the glare and give Zuczek much more leeway in aiming the fixtures. "I was kind of skeptical at first, but they really work well here," says Zuczek.

After modeling the different solutions on a computer, two schemes for lighting the murals were mocked up. One used theatrical framing projectors to outline the mural and inscriptions; the second



Below, left to right: A computer rendering of the statue in incandescent light; a computer image showing illumination levels; a mock-up using quartz on the statue and back wall.





The midge, the tiny insect indirectly responsible for the overabundance of spiderwebs on the memorial, is more attracted to cool lamps like metal halide than to incandescents.

employed a simple wall-washer. "It was very difficult to get the framing to work. It was just clumsy," says Zuczek. The wall-washer, in dimmable incandescent, was less problematic, and this was the solution Zuczek recommended to his client.

As for the study of the exterior lighting, the Park Service required that Zuczek grapple with the same issues he had for the memorial's interior. "Overall, the exterior lighting was just in bad shape. Not only is it outdated, but some of the pole-mounted fixtures are so overgrown, they are just lighting tree limbs," says Zuczek.

Where preserving the fabric of the structure was concerned, Zuczek was asked to determine if any particular lamp type had a propensity to attract midges, mosquito-like insects that breed in the nearby Potomac tidal basin. According to entomologists, midges are drawn to the memorial's lights primarily at dawn and dusk in the summer months. Spiders spin webs on the outside of the building to catch the midges, and the webs end up making the stone look dirty. In the past the spiderwebs had been cleaned off with high-pressure hoses, but this procedure was wearing away the marble of the memorial. "That practice has been stopped, but the constant cleaning is a major concern," says Zuczek.

To find out if midges were particularly sensitive to any specific group of wavelengths in the spectrum, U.S. Department of Agriculture scientists conducted electroretinogram tests. "We found out that the midges can pretty much see what people can see, except that they're more sensitive to bluer, cooler colors and are more attracted to them. It's the same reason ultraviolet lamps are used in bug-zappers."

Zuczek then took the theoretical work on the midges into the field for testing. "There are only a certain number of different lamp types we are planning to use, so we mounted one of each in a different collection box," he says. The lamps were aimed through an electric zapper grid inside the boxes and shined toward a sheet of adhesive mounted sticky-side out on the wall. "So any insects drawn by the light reflecting off the wall either stuck to the sheet or were killed by the electric zapper and collected in the box." Zuczek conducted the tests for a week, during morning and evening periods, and then recorded the body count. "That confirmed our findings in the lab," Zuczek continues. "For example, high-pressure sodium attracted the fewest insects, and incandescent the next fewest. Metal halide had the highest percentage of blue light, and we confirmed that most of the insects preferred this kind of source. The study really only tells us which kinds of lamps are better and which are worse in terms of attracting midges—it's what you'd call a relativity study," says Zuczek.

Zuczek again used computer modeling to study different lighting solutions and decide which to mock up. The first trial, with high-pressure sodium, was a big disappointment. "Nobody thought it was appropriate. It turned this beautiful white marble building yellow." This led Zuczek to make the first compromise: the best light for keeping midges away because it was rich in the red end of the spectrum was not the best light for people. Zuczek also tried metal halide, which produced a crisp white color but attracted too many insects.

Zuczek's report recommends lighting the memorial with quartz incandescent, which in terms of color stands somewhere between the high-pressure sodium and metal halide. As Zuczek points out, however, the existing lighting is incandescent, and people are used to it. Incandescent lighting is also easily dimmed, so automatic lighting controls could be used to discourage midge activity during the peak dawn and dusk hours and then slowly brought up to the appropriate intensity.



Above, left to right: A representation of light levels; a rendering of the facade; a mock-up of the wall-washer behind the colonnade.

"It surprises some people that throughout the study incandescent was recommended for lighting the memorial over more modern sources," says Zuczek. "But sometimes choosing a lamp isn't just about saving energy or how long the light is going to last. What is equally and sometimes more important is illuminating an object or building so that it is beautiful to look at and brings pleasure to those who view it." ■

Project: *Study for relighting the Lincoln Memorial, Washington, D.C.*
Commissioned by: *National Park Service*
Architect: *Einhorn Yaffee Prescott Associates—Dan Zuczek, lighting specialist*
Computer Consultant: *MYN-ZY*
Electrical Contractor: *R. D. Moody*
Entomology Consultant: *Donald Messersmith; U.S. Department of Agriculture—Lawrence Pickens*



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CIRCLE 61 ON INQUIRY CARD

After a Difficult Youth, Motion Sensors Come into Their Own

by Lindsay Audin

Tighter building codes and energy-conservation efforts made occupancy sensors common tools for controlling lighting and HVAC in the 1990s. However, a number of difficulties limited their use. Typical past problems included false "ons" caused by wind gusts from windows and air-handling diffusers; false "offs" caused by failure to detect small movements; incorrect initial time or sensitivity settings that required repeat visits by the installer; interference with some hearing aids; and inability to automatically adjust for room changes. Many of the flaws inherent in this technology have been addressed, and manufacturers are finally beginning to deliver on their "install-and-walk-away-forever" promises. To some degree, solutions to all these shortcomings have been sought through the use of dual-technology (infrared-ultrasonic or infrared-audible) sensors; adaptive chips that "learn" occupancy patterns; selectable-frequency oscillators; and improved mounting systems.

Sensitive types promise easy access

Older sensors on the market use security-alarm technology that dates back to the 1970s. Newer models have undergone several improvements, and now installing technicians have numerous options for fine-tuning them. Sensitivity to nearby air movement and ambient-light levels that could trigger the sensor can be adjusted, as can the degree of magnitude and location of the triggering motion. The MyTech Omni II DT-1000 series also claims that it can self-adjust for installation errors and compensate for changes to occupancy and room-layout patterns.

Watt Stopper's new versions of dual-technology sensors boast a variety of other changes, including easier access to controls and a new swivel mount that simplifies locating and directing the sensor. MyTech also recently introduced a new mounting escutcheon for attaching sensors to hard ceilings that must use surface-mounted wiring in conduit or WireMold.

Extra options for adjusting the sensitivity of the motion sensors are not the only improvements. Many older-model ultrasonic sensors operated in the 25kHz frequency band, which sometimes interfered with certain hearing aids. Newer models use oscillators in the 32 to 40kHz frequencies, significantly higher than those of any device used by the hearing-impaired. While the coverage of a sensor may decrease when a higher frequency is used, greater sensitivity has been added to compensate. One model can be changed from 40 to 32kHz with the flip of a DIP switch, thereby increasing coverage without adding equipment.

Another pleasant surprise: the power packs, which contain a relay and low-voltage transformer, no longer have the heft and appearance of bricks. Using lightweight solid-state transformers (instead of the usual heavy copper windings) and miniature air-gap relays, these units would easily slip into a cigarette pack—or one of the light fixtures they're designed to control. Older models required a separate metal enclosure and heavy-duty mounting, with the attendant extra installation costs.

Communicating with the body electric

Some MyTech models also include a feature that allows the installer-technician to "interrogate" a sensor. Standing near the unit, the interrogator uses a series of quick forward-backward hand motions to ask the sensor to reveal its settings through coded flashes of its LED indicator light. Since installation can also involve standing perfectly still during part of the process, don't be surprised if your next sensor installation looks more like Tai Chi. Information coming from the sensor includes timer setting and sensitivity, air interference, and failure from an internal error. Because this communication does not involve physical contact with the sensor, it may be done without the ladder typically required for servicing ceiling-mounted units.

An elegant twist on dual technology

Sensor Switch recently introduced a different twist on dual technology, using both infrared and microphonic technology. Sensing sound in the audible-frequency range (for example, room noise) and combining that with apparent motion of a warm body, its sensors can determine when to keep the lights on even when motion is not being sensed. Imagine, for example, a nearly motionless writer pecking away at a keyboard. While no infrared sensor can detect the small finger motions of typing, the clicking of the keys is sufficient to alert this sensor that the lights should stay on. While certain limitations could occur in high-noise areas, this method is an elegantly simple (and inexpensive) way to avoid the false "offs" that led to the removal of many sensors in the past. ■

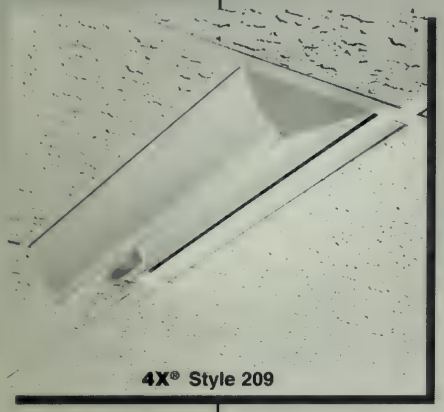


The newest generation of motion sensors is easier to mount and adjust and provides improved access to controls. Some allow technicians to "interrogate" them with hand movements.

Lindsay Audin is president of Energywiz, an energy consulting firm, and lighting research consultant to E-Source, an energy-consulting group.

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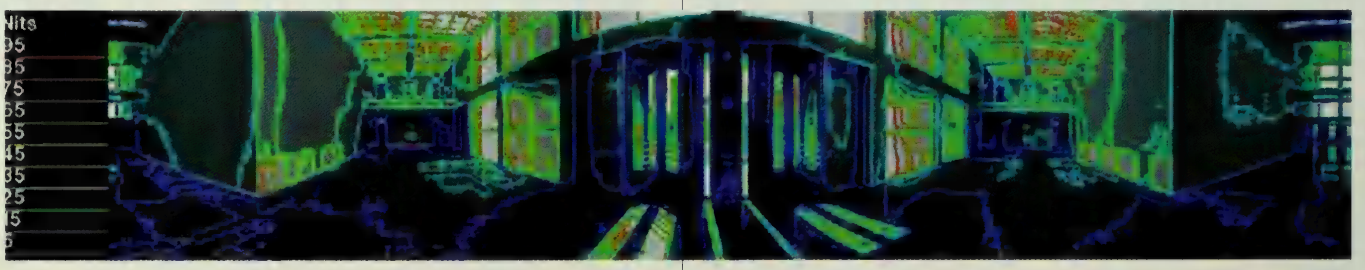
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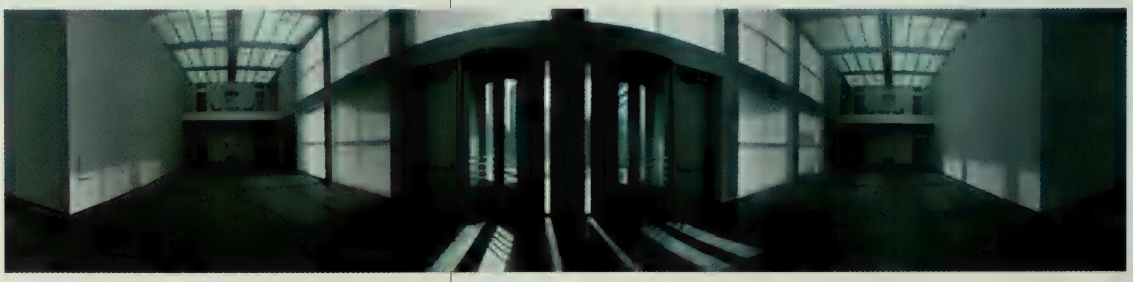
New Technology for Designing Daylighting Systems for Art Museums

by Mojtaba Navvab

Light is essential in conveying a work of art's beauty to the eye of its beholder, but light can just as easily destroy the object it aims to honor. Because the museum curator's mandate is to both display and protect art, the effective and responsible lighting and daylighting of museums is of great importance to them as well as to architects and lighting designers involved in the art world.

The daylighting systems in the Museum of Contemporary Art (MCA) in Chicago, designed by Josef P. Kleihues [RECORD, August 1996, pages 80–87], were studied by the University of Michigan Lighting Simulation Laboratory using new daylighting design tools at the early stages of design, and just prior to being finalized. The two studies concluded that the lighting conditions were optimal for both viewing and conserving art. Kleihues's idea was that nothing should interfere with the visitor's enjoyment of art and that daylight should be used wherever possible throughout the second-floor galleries.





A video scan of a scale model of the MCA was digitized and computer-processed to show luminance-level predictions (above) and to create a rendering of the space (right).

Daylight provides a more diverse color spectrum for viewing works of art than electrically generated light. However, to preserve works like paintings and textiles especially, direct sunlight must be kept out of the galleries. Minimizing the intensity of light and number of illuminance-hours per year prevents artwork from being damaged by ultraviolet radiation.

Mojtaba Navvab is an associate professor of architecture at the College of Architecture and Urban Planning of the University of Michigan in Ann Arbor. He is also the director of the University of Michigan Lighting Simulation Laboratory.

Although hanging a diffusing material under a skylight might sound like the simplest way to eliminate direct sunlight without screening out all light, it can, if improperly done, produce an extremely bright ceiling plane overhead. An observer standing in front of a glass-covered photograph or a painting with a glossy varnished surface risks having to look at veiling reflections instead of art.

An art museum's location can present its own unique set of problems. The high-rise buildings that surround the MCA, for instance, cast irregular patterns of shadow on the skylights, and as the time of day and year changes, the buildings might reflect light onto the openings. The galleries' daylighting systems can control the variability of light striking the skylights so that the dynamics of outdoor daylight are perceptible but not strong enough to cause excessive nonuniformity in the lighting of the spaces.

Lighting designers dig models...

Designers have many tools at their disposal for predicting patterns of luminance (light measured directly from the source) and illuminance (light measured after it has reflected off a surface) distribution. Each tool has its own limitations, and no single one has the capability to solve all the lighting designer's problems. The data required also varies widely from tool to tool, so the choice of instrument varies during the design process. Some are needed during the preliminary design phase to help determine lighting needs, others not until later stages to help assess the performance of a particular design solution or to satisfy building codes.

PHOTOGRAPHY: © MOJTABA NAVVAB

Computer modeling uses mathematical representations of buildings, weather data for their proposed locations, and algorithms to predict daylighting performance. Computer modeling has become the tool of choice for many designers because it is fast and computer programs produce renderings as well as reports. The shortcoming of computer modeling is that its renderings tend to be far better than its numerical findings are accurate.

Scale-model photometry is another method of predicting luminance and illuminance values. A scale model of a proposed structure is built and fitted with tiny photosensors that measure quantities of light, either inside an artificial sky or with natural light if the model is being tested outdoors. This technique can provide a very accurate set of data for both quantitative and qualitative daylighting studies; however, the accuracy of the method is determined by the expertise of the person conducting the measurements and the quality of the setup. Models with specular surfaces—such as those that might be found on gallery walls—and irregularly shaped glazing systems are among the lighting scenarios that are particularly challenging to the experimenter.

...but videos are sexy, too

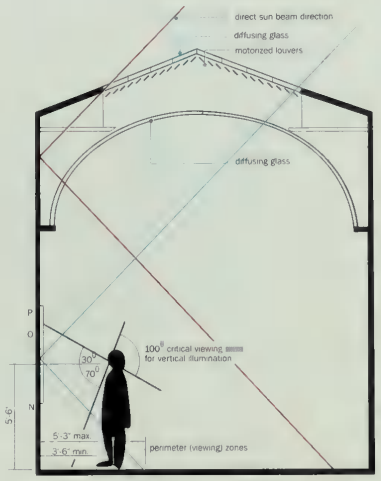
Now information that was unavailable with either of the modeling techniques discussed above can be gathered using video or photographic images that have been digitized and computer-processed. For example, detailed information can be gathered on the effect of daylight penetration inside a gallery and directly on the artwork being displayed. If clear and diffused glazing systems were studied, their luminance patterns would

AN INSTANT COLOR IMAGE OF THE LIGHTING CONDITIONS IN THE SPACE CAN BE PRODUCED FROM A VIDEO SCAN.

demonstrate the extremes in contrast in the distribution of light between the two systems, helping the lighting designer to make the best possible choice between these two and many other possible variations. A video camera can now scan a space and produce a digitized computer-generated image in color. A designer can observe the lighting conditions of the space from various angles and produce an image of each with various luminance, brightness, or color-temperature levels. The images can be reproduced as a panoramic view of the scene or enlarged and rendered as traditional drawings of lighting schemes. And a wall, window, shading system, or space layout can be changed and evaluated under the same lighting conditions. The camera acts as a human eye to give on-the-spot feedback that records and processes the scene in photometric quantities.

Daylighting experiments for the MCA galleries

The University of Michigan's sky simulator was used to reproduce a variety of sky and sun conditions in a controlled and repeatable manner when experiments for the design of the museum's second-floor gallery were conducted. In addition to scale-model photometry, a video camera connected to a scanning system gathered luminance-distribution data for various lighting system scenarios.



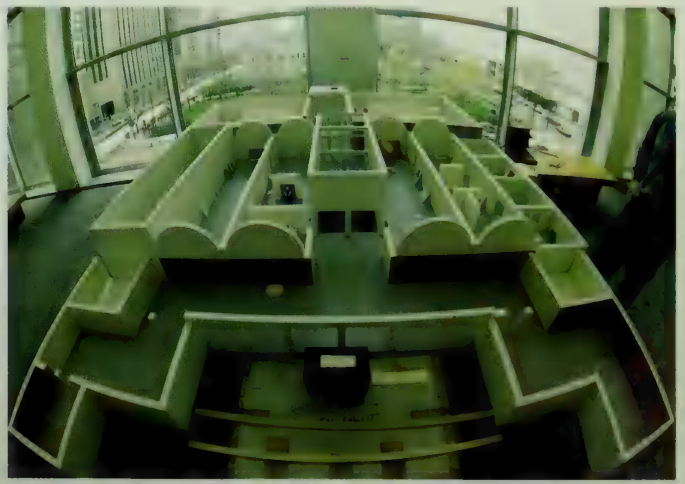
SCHEMATIC DIAGRAM OF MCA SECOND FLOOR GALLERIES SHOWING OPTIMUM VIEWING DISTANCE

The final roof system was developed based on physical as well as computer-generated modeling studies. Two of the many rendered images and luminance studies of the final space (opposite) show the patterns of daylight and luminance distribution of daylight penetrating the roof system. These patterns highlight some of the typical daylighting conditions found in the gallery spaces.

On the whole, the daylighting system designed for MCA was predicted to create a safe place to display art and a comfortable place to view it. The roof system over the galleries is complex: it is glazed with diffuse material with a system of louvers that adjust automatically to exterior lighting conditions. The louvers reflect light coming in from the south and direct it down to the north wall and exhibit areas. More diffusing material makes up part of the galleries' curved ceilings.

Daylighting design of gallery spaces is far from simple. The more that is known about how to protect art from light damage while displaying it for maximal enjoyment, the greater the role that new design tools like video modeling will play. There is no single design tool yet that can meet every lighting need, but today's technology advances what is possible. ■



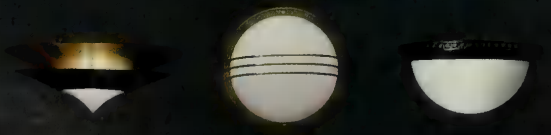


A model of one of the proposed MCA galleries (left). Rows of photometers are used to collect luminance data, and the video camera will be used to scan the model. The model itself (right) is very large.



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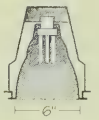


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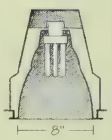


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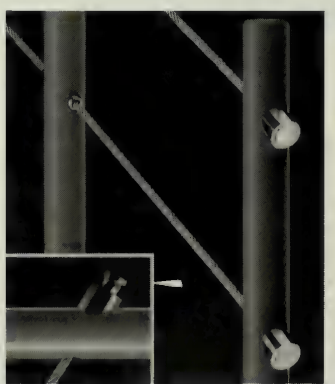


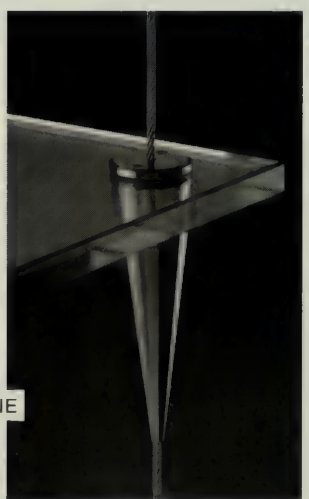


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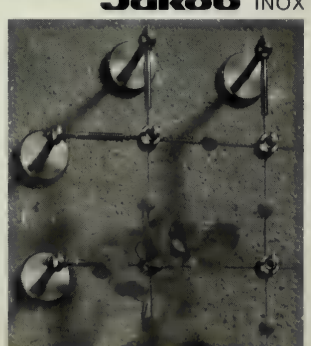
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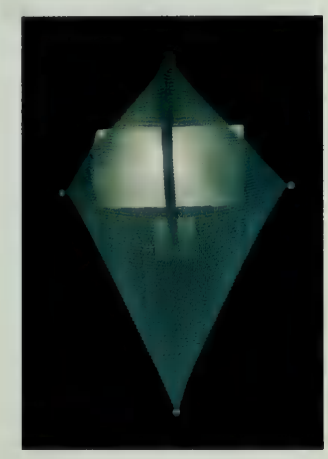
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LIGHTINGBRIEFS



◄ Sophisticated lamp
Recognized as a rattan, bamboo, and teak furniture designer, McGuire recently introduced a collection of lighting influenced by Chinese Han Dynasty ritual vessels. The large Jarlet, shown here, is fashioned in antique copper finish with a natural ivory linen shade. Available also in a smaller size. 415/626-1414. McGuire, San Francisco. **CIRCLE 200**

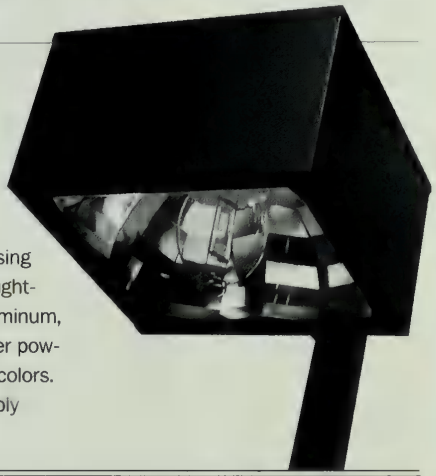
► A mark of distinction
Designed for Lumid by Dominique Alary, the light fixture Mantaray, shown here, was inspired by aluminum chains. Available in two different weaving styles—regular and Japanese—and twenty-two color options. More information on Lumid and Mantaray can be accessed on the Internet at www.lumid.com. 888/TO-LUMID, Montreal. **CIRCLE 201**



► Colored pendants
The six Soft Industrial pendant fixtures from d'ac include (from left to right) Boralo (yellow), Fonari, Boralo (silver), and Clareta. (Alanzia, Davidio, and Encino are not shown.) Each has an inverted drum-shaped canopy made of spun aluminum with a five-inch-diameter diffuser opening. Canopy choices include polished aluminum; seven metallic-finish baked-enamel colors; eleven gloss-, matte-, or crinkle-finish baked-enamel colors; and custom colors. All canopies suspend from black aircraft cable cord. 914/698-5959. D'ac, Mamaroneck, N.Y. **CIRCLE 202**



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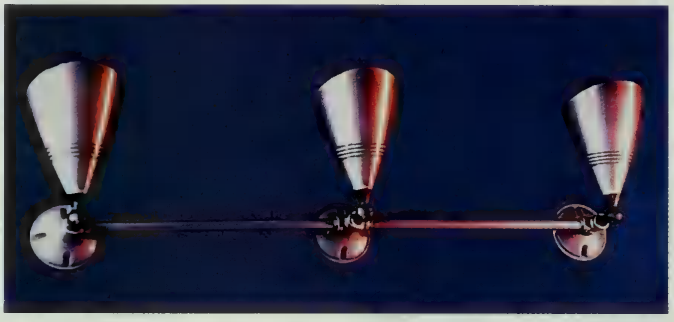
CIRCLE 66 ON INQUIRY CARD

LIGHTING BRIEFS

▼ Inconspicuous light
Lincs Halogen, from Alkco, is a miniaturized, energy-efficient, modular halogen undercabinet system with three-dimensional rendering that is dimmable with standard incandescent switches. Each fixture is 1.19 inches high and 4.19 inches deep. Illumination is provided by a choice of one, two, or three 12-volt, 20-watt, T3 bi-pin halogen lamps for 9-, 18-, or 27-inch fixture lengths. The fixture is UL- and CUL-listed. 847/451-0700. Alkco, Franklin Park, Ill. **CIRCLE 204**



▼ The three sconces
Since 1990 lighting designer Paul Merwin has illuminated restaurants, retail stores, offices, and exteriors in the United States, Mexico, Canada, and Ireland. One of his more recent creations, the Tri-Bullet Sconce, shown below, is 43 inches long and can be mounted facing up or down. It's made of brushed aluminum. Pipes and canopies are painted a silver-gray hammer tone. 718/625-7661. Fabulux, Brooklyn, N.Y. **CIRCLE 205**



▼ Enjoy the great outdoors
Designed to light up walkways, pathways, and open landscape areas, BEGA's low-level directional luminaire is made with die-cast aluminum, heavy-cast glass, and stainless steel.



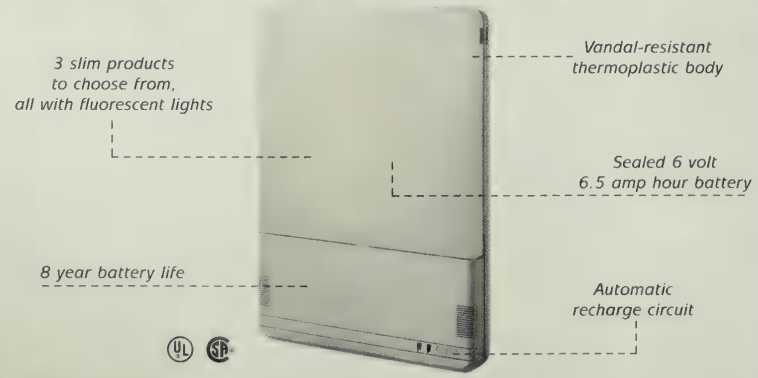
180- or 360-degree lighting distribution comes from an internal optical system. The directional luminaire is also suitable for use in wet locations. 805/684-0533. Carpinteria, Calif. **CIRCLE 206**



▲ Handblocked shades
Installed in hotels, conference centers, and restaurants around the country, the cone-shaped pendant fixtures with bent wire frames are made by the firm of Galbraith & Paul. The handmade paper shades, created with permanent fabric paints, are available in 16 patterns and can be mixed and matched with any of the company's 10 lamp bases. Shades are also available separately. UL is available upon request. 215/923-4632. Galbraith & Paul, Philadelphia. **CIRCLE 207**

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LIGHTINGBRIEFS



◄ Weight, counterweight
CSL's lighting line includes counterweight suspension units, wall sconces, and wall- and ceiling-mounted spotlights. The Trio-Spot Ceiling Unit in polished chrome, shown, is a triple-point, ceiling-mounted spotlight fixture that uses MR11 and MR16 low-voltage lamps. Also available in a white finish. 805/257-4155. CSL, Valencia, Calif. CIRCLE 208

► Interchangeable lighting
Now available in the United States, the European-designed KlemLite CE Series 171, from KlemProducts, is a low-voltage halogen spotlight. It comes equipped with modular plug-in transformers for 110 and 220 current, allowing it to be used in the United States and abroad. The fixture and light heads tilt and/or rotate. Color choices include black, silver, or white powdercoat finishes. 847/364-6444. Skanda Lights, Elk Grove Village, Ill. CIRCLE 209





▲ Artful interpretation
Jonah Zuckerman created these walnut and handmade paper sconces with a shelf so the original client could display her collection of Chinese boxes. Designed to cast warm amber light across wall surfaces, these elegant fixtures can now be used to illuminate any small object. The 15-by-8¾-inch light is also available in other woods. For residential use only. 718/596-6502. City Joinery, Brooklyn, N.Y. CIRCLE 210

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LIGHTINGBRIEFS

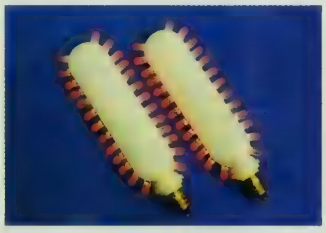
► Hanging ideas



This contemporary design is made of satin-finished nickel and acrylic. The bowl and cap, of faux alabaster, can be ordered in a variety of sizes and finishes. The fixture is 3 feet high and 45 inches wide with 6 lamps. 800/621-3907. New Metal Crafts, Chicago. CIRCLE 211

▼ New exit

ProLight's exit sign retrofit kit, the 2.2-watt XFR, consists of two fixtures, each with 26 LEDs in a halo configuration, and fits where 20T61/2 incandescent bulbs have been used. The real news is that the XFR is more cost-efficient than traditional incandescent fixtures. At $.10 per kwh, the XFR costs less than $20 to operate over 10 years. During the same period, incandescent 20-watt bulbs would consume about $350 of energy and would have to be replaced as many as 60 times. 800/968-2558. ProLight, Inc., Holland, Mich. CIRCLE 212



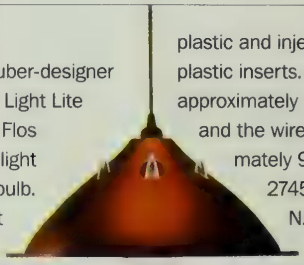
► Personal remote control





Many office workers suffer from eyestrain, headaches, or blurred vision caused by overly bright fluorescent lighting and its harsh glare. With the PerSONNA system, from Lutron, each worker has personal control of the lighting in his or her area. Using a hand-held remote control, workers can adjust the lighting with a simple touch of a button. This system complements the operable windows discussed on page 225. 610/282-3800. Lutron Electronics, Inc., Coopersburg, Pa. CIRCLE 213

▼ Chic and sleek



Created by French uber-designer Philippe Starck, the Light Lite pendant lamp from Flos gives off a diffused light from a fluorescent bulb. The streamlined but funky diffuser and reflector are made from serigraphed thermoformed plastic and injection-molded colored plastic inserts. The light measures approximately 17 inches in diameter and the wire length is approximately 9 inches. 516/549-2745. Flos, Huntington, N.Y. CIRCLE 214

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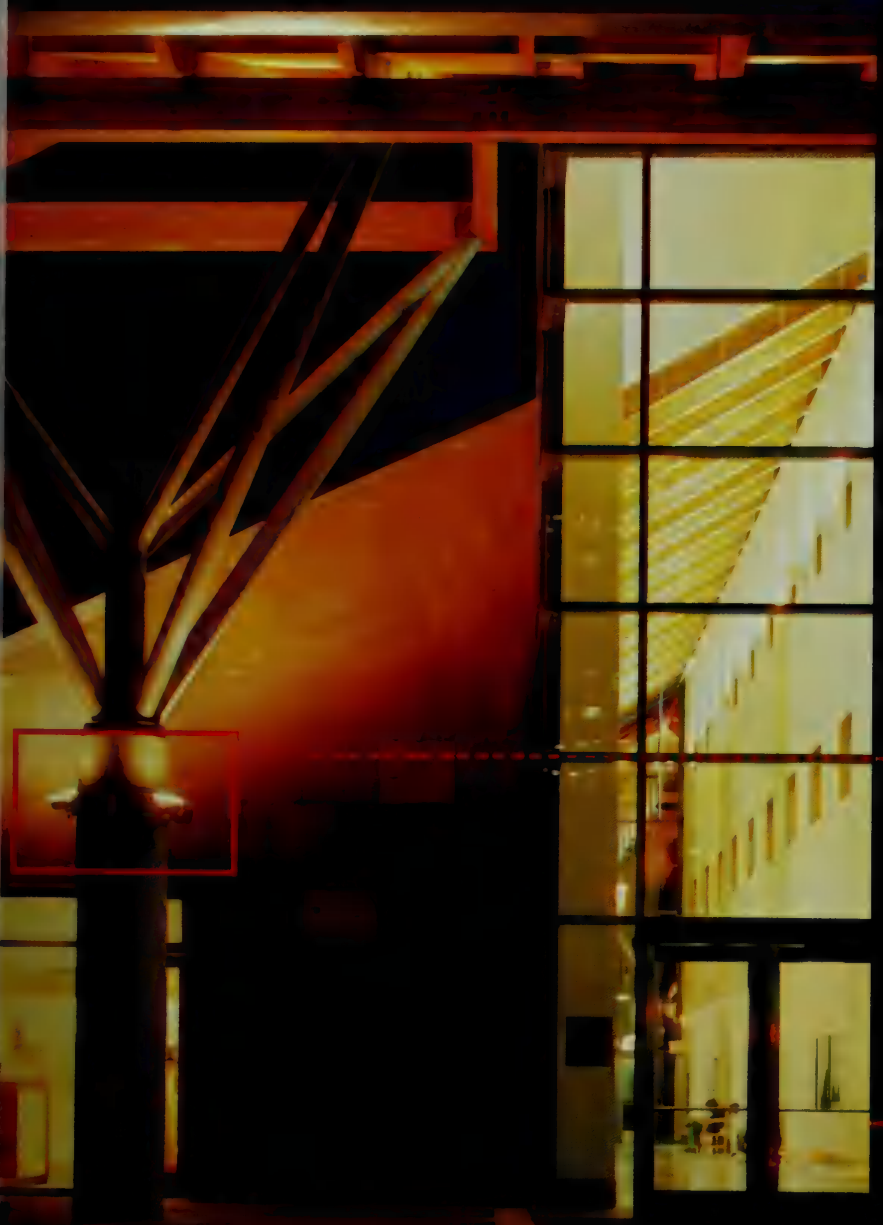
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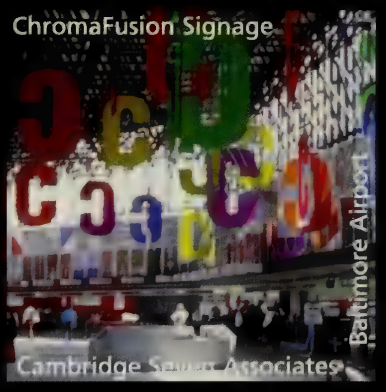
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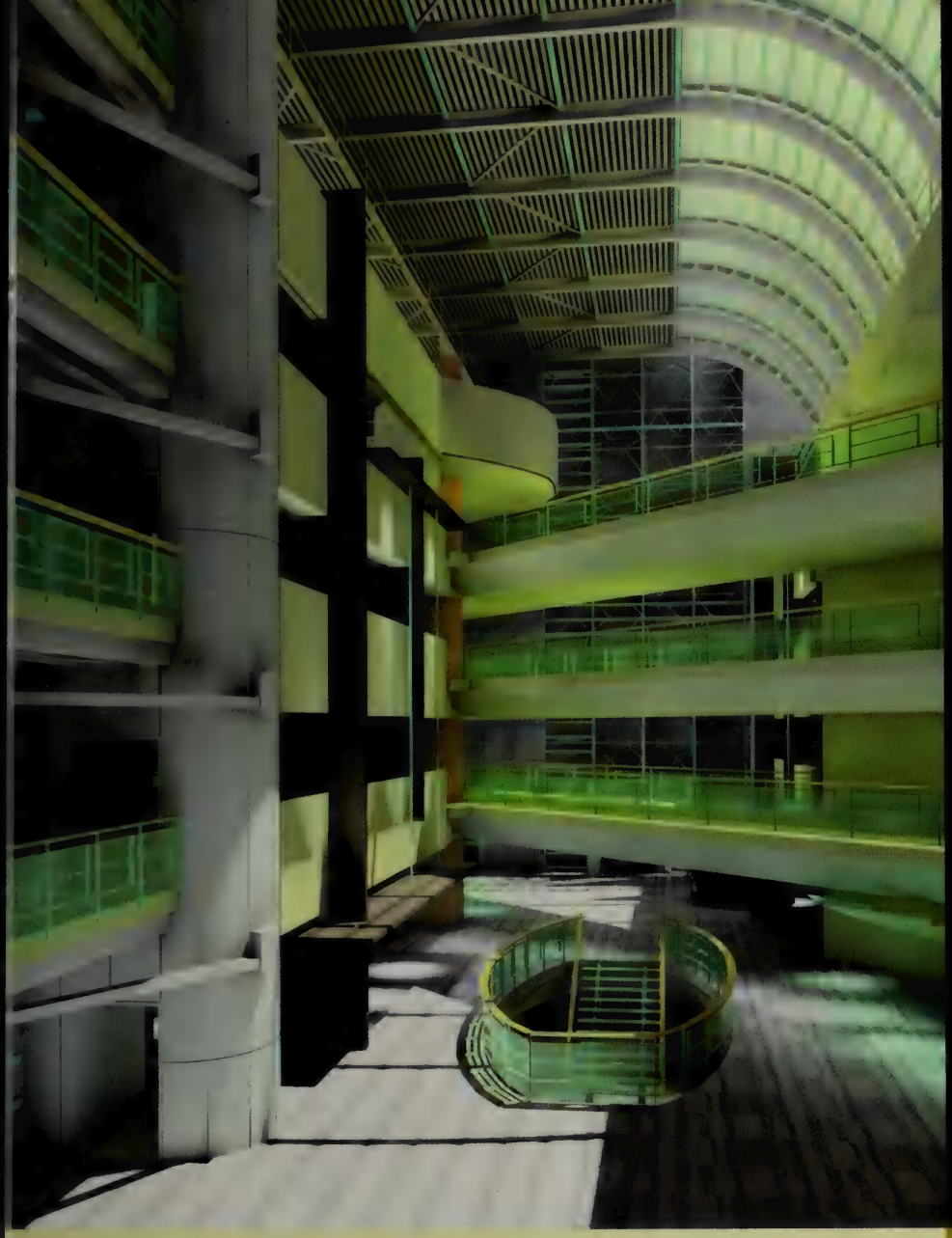




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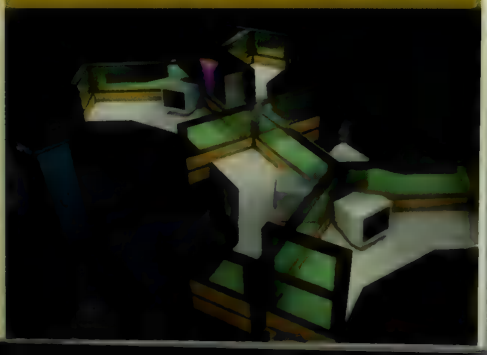
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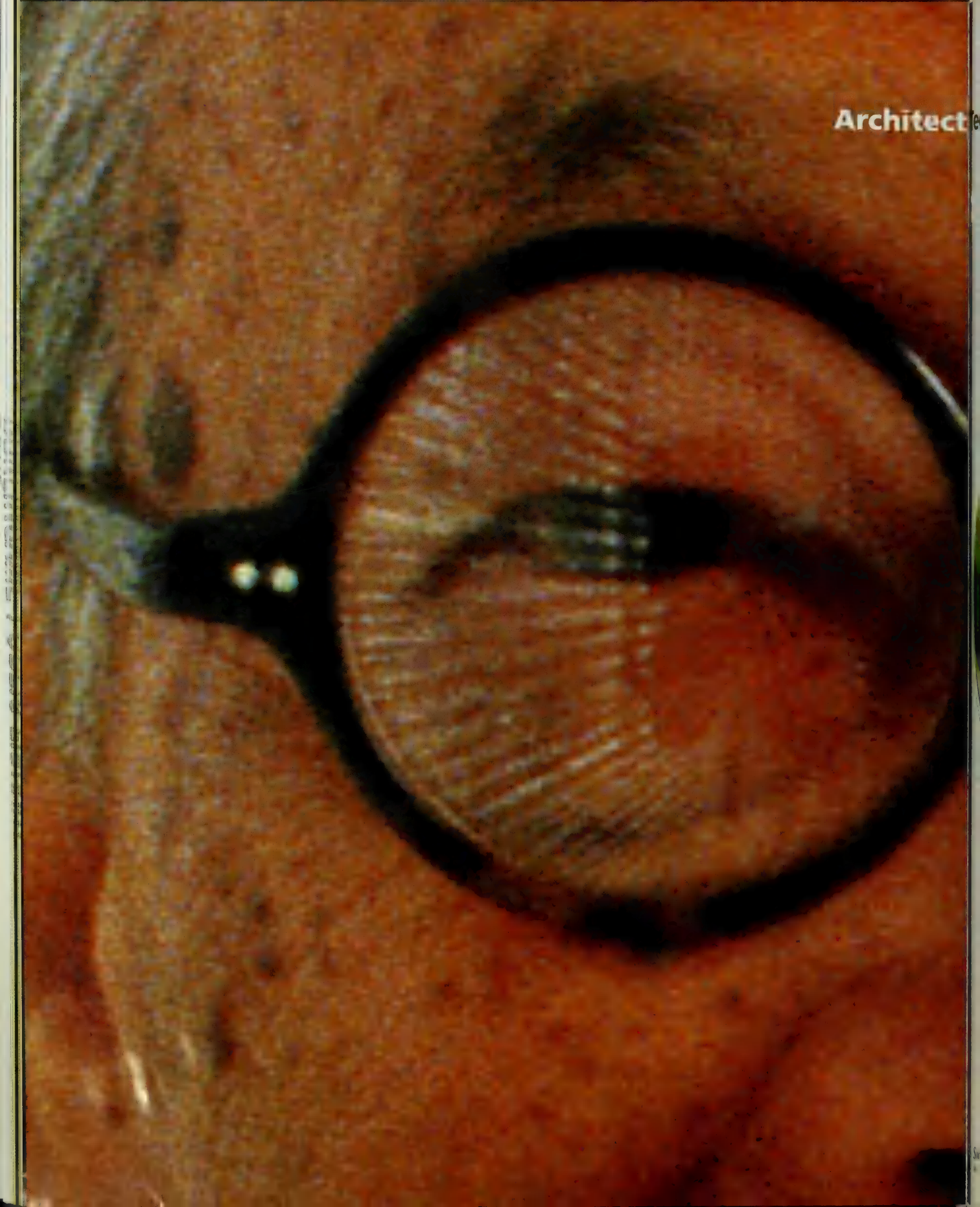
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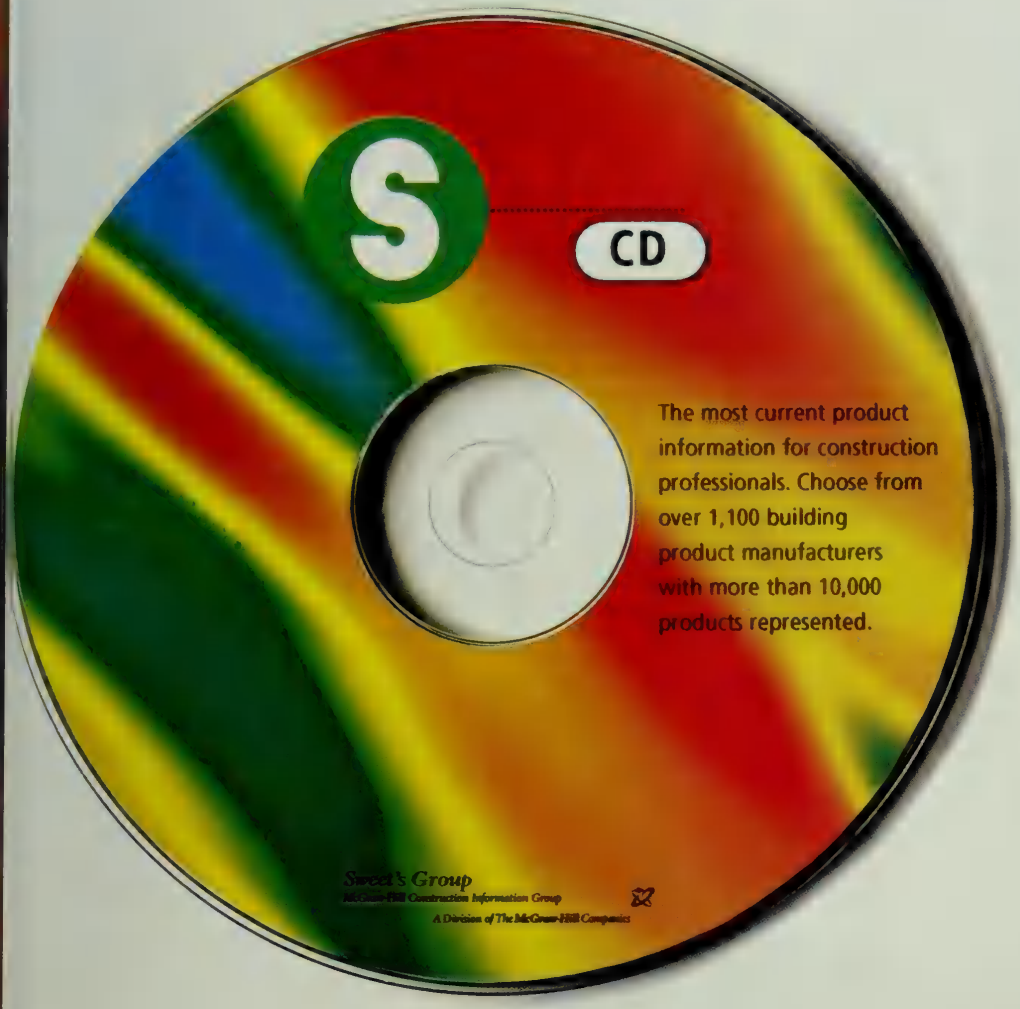
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CIRCLE 77 ON INQUIRY CARD

NEW PRODUCTS



HOW TO CREATE A SPACE THAT PROMOTES AN OPEN-WINDOW POLICY

The three window types displayed here are just a few of the operable window options on the market for commercial architects and builders. Among the favored features are full-tilt and in-swing modes and zero sight line.

Concealed vent

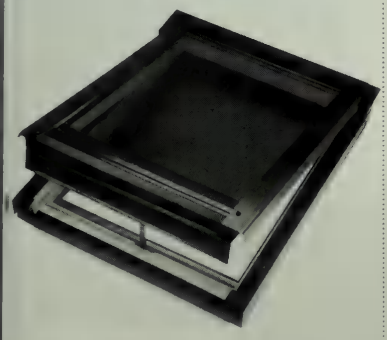
When installed with the CW-250 and ICW-250 curtain-wall system, the Vistawall 4500 Concealed Vent (above) provides a ventilation system that projects out but is concealed from the exterior when closed. The system has a zero sight line from the interior head and sill, blending into the surrounding transoms. Also available is a single-lever, multipoint lock as well as split-finish capabilities and anodized or painted finish. 972/524-1951. Vistawall, Terrell, Tex. CIRCLE 215

Operable roof window

ODL's Vista Deluxe Roof (below) is an operable roof window that offers dual-sealed, ¾-inch, argon-filled, insulated tempered glass with a low-E coating and Santoprene gasketing. Laminated glass is also available. The solid hardwood frame can either be stained or painted. 616/772-9111. ODL, Zeeland, Mich. CIRCLE 216

Tilt and turn

The Tilt and Turn Series 7000 casement window (below), from Mannix, can be operated in full-tilt mode for ventilation or as an in-swing casement for cleaning. Custodial locks are available, and the hardware is offered in painted white, dark bronze, or clear anodized finishes. 800/752-6483. Mannix, Brentwood, N.Y. CIRCLE 217





To control the temperature in my office on the 41st floor of a Manhattan skyscraper, I have to fiddle with the thermometer in the news editor's office next door. Some days, I wish I could just open a window. Alas, that's impossible. And the building's maintenance department would probably go nuts if we could all open our windows. It might cost a bit more to cater to the comfort of individuals, but the end result is surely a happier workforce and thus higher productivity. So this month we're highlighting products that would fulfill one worker's simple dream. We also offer a look at impact-resistant windows that are stylish but strong.

—Elana Frankel, New Products Editor

IMPACT-RESISTANT WINDOWS PROVIDE STYLISH PROTECTION

In areas of the country recurrently hit by hurricanes, roll-up accordion shutter systems are no longer the only way to protect windows. One popular choice, laminated window glass, is a safety glazing material made by bonding layers of glass with a polyvinyl butyral interlayer.

Complying with South Florida Building Codes, SBCCI and ASTM code-approved windows with laminated glass have been critically examined under new standards, including simulated hurricane-force winds and flying debris. Laminated glass has proven to provide a solid, impact-resistant product for states such as Florida, South Carolina, and Texas. And, in keeping with other current safety issues, laminated glass is also being considered for buildings where protection from bomb blasts is an issue—for example, federal buildings. Another added benefit: tinted laminated glass can reduce heat gain from sunlight and lower air-conditioning costs while also controlling glare.

So when Pavarini Construction needed Art Deco–style narrow-steel casement windows for the renovation of the landmark Tides Hotel in Miami's Art Deco district, the company chose Skyline windows, which are capable of withstanding 100 mph winds and flying debris. The windows, made with aluminum, also satisfied the Miami Historical Society Design Review Board. A final—and, for some, the most important—advantage is that the windows have an insulated glass package for sound attenuation, blocking out beach and party noise.



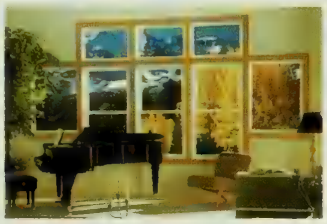


The renovation of the Tides Hotel in Miami (above) required installation of approximately 400 Skyline windows (top).

Skyline has a strong presence in the Miami area—the company has installed windows in six hotels including the Essex, Ocean Front, and Tiffany. And its product is cost-effective: Skyline's John Snyder estimates the cost to be about $30 to $60 per square foot, depending on conditions and spec needs. 212/491-3000. Skyline Windows Products, New York City. CIRCLE 218

ENERGY-EFFICIENT RESIDENTIAL WINDOWS

Various recent technologies have increased the energy benefits and all-around efficiency of residential windows. As a result, there are now more practical windows on the market that offer greater advantages. Three examples: low-E glaze coating, which reduces a window's U-factor; gas fills, which reduce the U-factor by suppressing conduction or convection; and UV-absorbing additives in laminated glass, which screen out damaging rays. This page highlights products that incorporate such technologies.

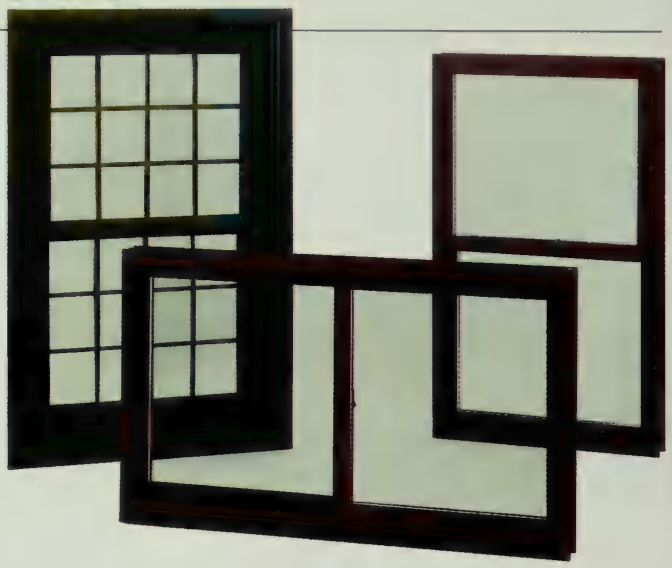




◂ In the pink
The frame and sash of Generations, the new composite window from Owens Corning, have pink insulating foam as well as standard, 1-inch, low-E glass with argon gas. The frame and sash are fusion-welded to help eliminate air and water infiltration at the corners. The windows are available in a variety of styles, including flat or sculptured Colonial-style grilles; white, light oak, or medium oak interior finishes; and V-groove or decorative art glass. Also available is a 1-inch triple glazing with two surfaces of low-E and krypton gas. Backed by a transferable limited lifetime warranty. 800/GET-PINK. Owens Corning, Toledo, Ohio. CIRCLE 219

▾ Eastern tradition
Inspired by windows from Japan's Meiji period, the mahogany custom windows below are now available in the United States by special order. Designed by Suellen DeFrancis, the windows are water-resistant, having withstood many typhoons, and earthquake-resistant, as well as sound- and shatter-proof. 212/879-8386. Suellen DeFrancis, New York City. CIRCLE 220





▴ Choices, choices, choices
Kawneer's Sealair 8400TL (thermal) windows are available as fixed, offset fixed, single- or double-hung, or horizontal sliding with a 4-inch master-frame depth. Options include a heavy-duty frame, with or without applied or between-the-glass muntins; a standard flat face; or beveled putty-glazed replication. All are factory-glazed to ensure performance. 770/449-5555. Kawneer Co., Norcross, Ga. CIRCLE 221



▴ Historic renovation
The 2250E EPIC series, developed for historic renovation projects, features a beveled exterior face that replicates the glazing on classic steel and wood windows. The windows meet or exceed ANSI/AAMA codes. Offered as projected, casement, or fixed. 715/845-2161. Wausau Metals, Wausau, Wisc. CIRCLE 222

▾ New vinyl
In addition to its full line, Hurd Millwork's new tilt double-hung Monument window is offered with insulated glass; low-E with argon; and/or Heat Mirror TC-88 and SC-75 for insulation and solar control. The window allows for the sash to tilt in and is available in a wide variety of sizes. Built to exacting specifications, the Monument line also includes casement and awning windows. 800/2BE-HURD. Hurd Millwork Co., Medford, Wisc. CIRCLE 223



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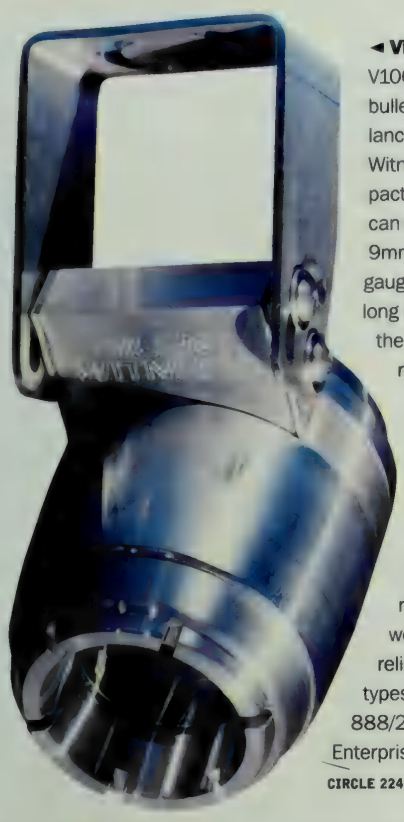
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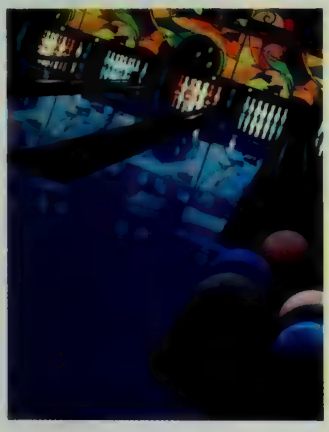
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PRODUCTBRIEFS

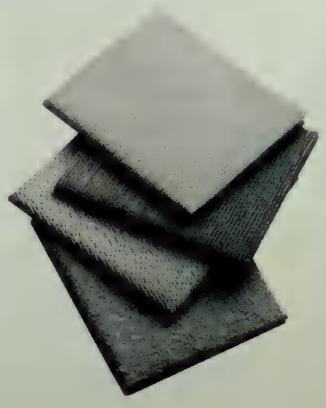


◂ Video surveillance
V100, the new stylish and bullet-resistant video surveillance camera from Silent Witness Enterprises, is a compact all-weather camera that can withstand assault from a 9mm handgun as well as a 12-gauge shotgun. Just 5 inches long and 3½ inches in diameter, the V100 meets UL 752 requirements for bullet-resisting equipment. The camera comes fully assembled with either a color or monochrome camera, lens, enclosure, and mounting hardware. The marine-grade aluminum enclosure is fully weather-sealed to ensure reliable operation in various types of environments. 888/289-2288. Silent Witness Enterprises, Ltd., Surrey, B.C. CIRCLE 224



▾ Wall coverings
Woven of 100 percent polyolefin, Tek-Wall Naturals is a collection of linen-inspired, textured wall coverings. Nine patterns include plain and crepe weaves, stripes, simple geometrics, chenilles, bouclés, and a horsehair effect. All are 54 inches wide with backed acrylic. They feature a Teflon finish and have a Class-A fire rating. There are 40 neutral and warm colors available. 800/645-3943. Maharam Design Studio, New York City. CIRCLE 226

▴ Latest in laminate for '98
Pionite has introduced 39 new colors to their 1998 laminate line. However, the real craze is glow-in-the-dark laminate, which, of course, could only lead to Cosmic Bowling. Shown here is the Brunswick Indoor Recreation Group's 100,000-square-foot entertainment complex, Red's, featuring glow-in-the-dark lanes. 800/746-6483. Pioneer Plastics Corporation, Auburn, Me. CIRCLE 225



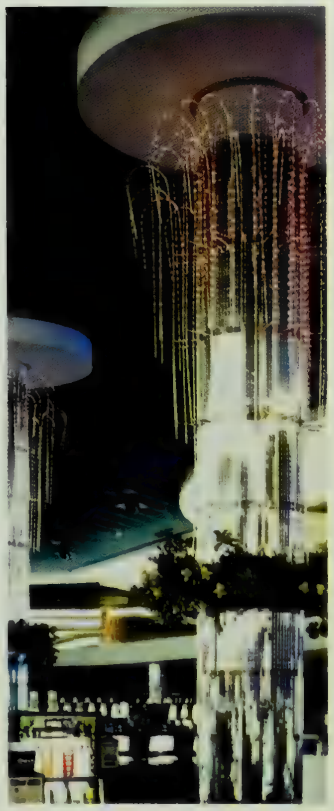


▴ Germ-free living
Through a new partnership between bathware manufacturer Aqua Glass and Microban, makers of antibacterial protection, Aqua Glass will license the Microban name and incorporate it into 40 percent of its gelcoat bathware line. 800/632-0911. Aqua Glass, Adamsville, Tenn. CIRCLE 227



▴ Construction choices
Available with most Aristokraft cabinets, a new construction style called Ply Select features 3/8-inch-thick, 5-ply, plywood sides plus 3/4-inch-thick wall shelves and dovetailed drawers. 812/482-2527. Aristokraft, Jasper, Ind. CIRCLE 228

▾ Mirror, mirror
Prisma flexible glass mirror, which wraps columns and covers curved or flat surfaces, can be found in hotels and casinos, like the one shown here in Green Bay, Wisconsin. Available in 16 colors, Prisma is installed with standard mirror mastics or mechanical fasteners. 800/228-5276. National Products, Louisville, Ky. CIRCLE 229

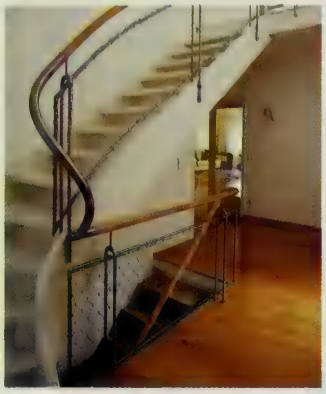


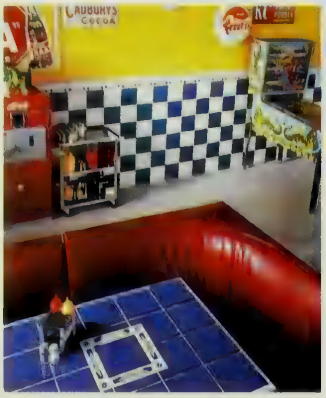
▾ Roll-up garage door
Although this Vintage Line Designer Door looks like it swings open, it's actually a wooden sectional overhead garage door that rolls up using an automatic opener. It comes standard-insulated with a Douglas fir framework and cedar surface. 800/241-0525. Designer Doors, Rivers Falls, Wisc. CIRCLE 230



PRODUCTBRIEFS

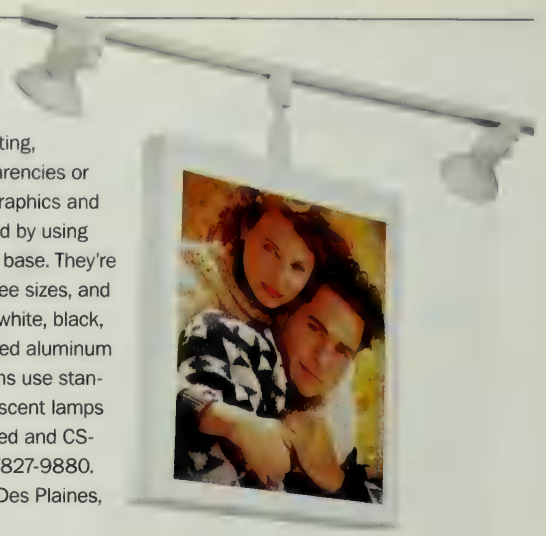
▼Flexible cable net
X-Tend stainless-steel cables, manufactured in Germany by Carl Stahl and available through DecorCable, have been used in furniture, railings (shown), and zoo enclosures. Joined together with nonrusting ferrules of tinned copper, the cable can be coated with UV-resistant polyamide. 800/444-6271. DecorCable Innovations, Chicago, Ill. **CIRCLE 231**



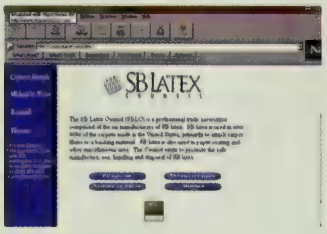


▲Bold accents
Meeting the demand for larger wall tiles, Dal-Tile's Nouveau Country line is offered in an 8-by-8-inch size. The latest color choices include Winter White, Burnt Sienna, Harvest Gold, Cottage Blue, and Forest Green. Three accent patterns are also available, including a floral, a starburst, and a kaleidoscope design. 800/933-TILE. Dal-Tile Corporation, Dallas. **CIRCLE 232**

► Backlit signage
Trac-Signs, from Juno Lighting, display transparencies or digital ink-jet graphics and can be modified by using the drop-down base. They're available in three sizes, and colors include white, black, or satin anodized aluminum finish. Trac-Signs use standard T-5 fluorescent lamps and are UL-listed and CS-approved. 847/827-9880. Juno Lighting, Des Plaines, Ill. **CIRCLE 235**



► SB latex awareness
A new product-awareness program is being sponsored by the SB Latex Council (SBLC). Product information can be found on the Internet at www.regnet.com/sblc. 202/962-9400. SB Latex Council, Washington, D.C. **CIRCLE 233**





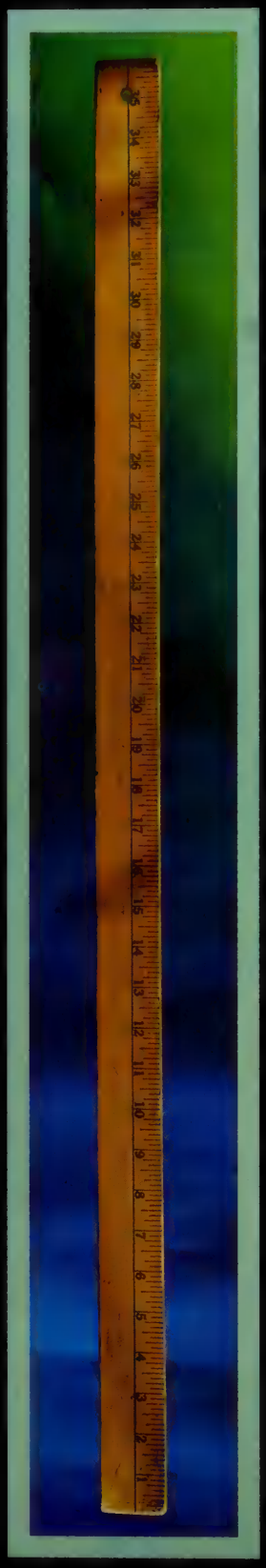
▲Protective sealant
Diamond Seal is a water-repellent protective sealant for glass, glass-finished surfaces, and granite. Shown is a piece of glass before (left) and after (right) Diamond Seal was applied. 800/975-9988. Diamond Seal, Salt Lake City. **CIRCLE 236**



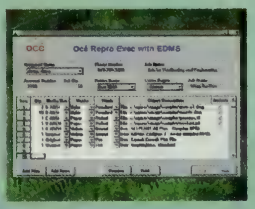
◄ Modern history
Since the 1880s Connolly's of London has provided leather for almost every luxury and sports car designer from Alfa Romeo to Zagato. Today the family supplies its high-end goods to Maximum Design, an upstart furniture company based in London. Shown is the Grand Tourner, a custom-made, limited-edition chair based on an Aston Martin/Ferrari design and a Rolls Royce interior. This modern take on an English classic is a bit more practical—the 6-by-3-foot chair is designed to come apart. 011/44/181-451-2710. Maximum Design Limited, Kent, England. **CIRCLE 234**



▲Faucet friendly
Gerber's Mini-Widespread faucet provides a widespread profile in 4-inch lavatory spaces that were traditionally reserved for centersets. The faucet features elliptical handles that simplify gripping, turning, and cleaning. 847/675-6570. Gerber Plumbing Fixtures, Chicago. **CIRCLE 237**

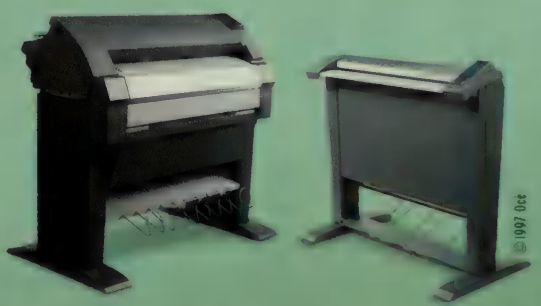


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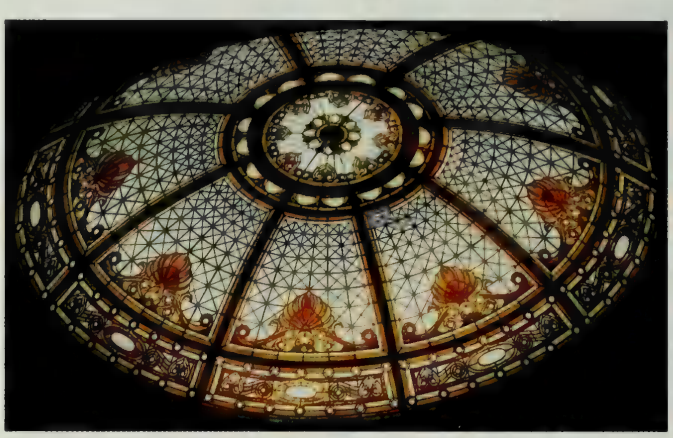
océ

CIRCLE 80 ON INQUIRY CARD

PRODUCTBRIEFS

► Take a seat
David Edward has acquired the exclusive rights to market and distribute Larsen's furniture collection worldwide. 800/394-2552. David Edward, Baltimore. CIRCLE 238





▲ Domestyle original
This 6-foot glass dome is in the entryway of a private Denver residence. Principal designer and company owner Susan Gold specializes in stained, leaded, zinc, and copper foil windows; etched, sandblasted, and carved windows; and copper foil and zinc lamp shades and domes. 303/939-9300. Elysian Art Glass Co., Boulder, Colo.
CIRCLE 241

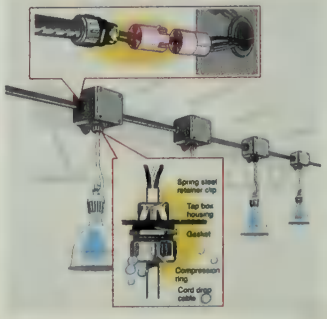
▼ Imitation stainless steel
The latest high-pressure laminate from NuMetal is a lightweight, 4-by-8-foot sheet that has the look and feel of stainless steel. The new product also has a finish that eliminates fingerprinting, a common problem with stainless steel. Shown here is a typical kitchen application. Other color choices include polished and brushed finishes, patina, and copper. 910/668-0488. Advanced Technology, Greensboro, N.C.
CIRCLE 239



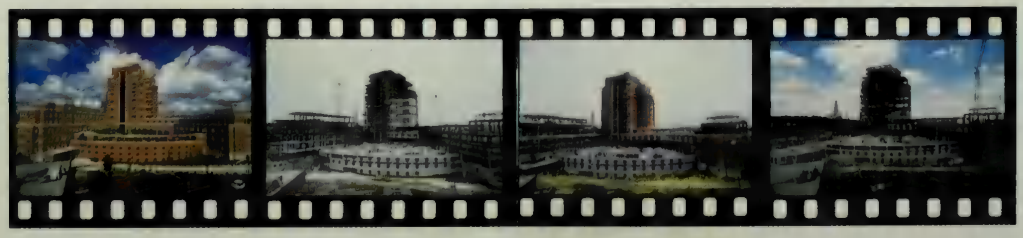


▲ Indoor foliage
The Interior Tree Freestanding Ceiling combines fabric- and acoustic-paneled leaves with a trunk that supports power, phone, and data cable communications. Lighting in the lower branches illuminates the underside. 905/803-5616. CGC Inc., Mississauga, Ont.
CIRCLE 242

▼ One-step installation
The WetFlex wiring system, from America Cable Systems, is designed for high- and low-bay lights that function in wet, damp, dirty, or dusty environments. Moisture- and dustproof, the system can be used in outdoor facilities, such as marinas and parking garages, or factories and heavy industrial plants. 800/426-3170. America Cable Systems, New Bedford, Mass.
CIRCLE 243



► Time-lapse photography
An automated time-lapse photography system provides a historical project record and accurate details. The system can be used to track project progress as well as weather. 703/578-3474. Latoff & Company, Arlington, Va. CIRCLE 240



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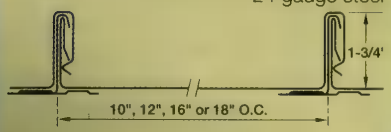
SNAP-CLAD Panels feature our full-strength PAC-CLAD® finish and are available in a variety of on-center dimensions, fabricated from either .032 aluminum, 24 ga. steel or 22 ga. steel. For more information on SNAP-CLAD Panels, please contact Petersen Aluminum Corporation, **1-800-PAC-CLAD or visit our web site @ http://www.pac-clad.com**



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.032 aluminum
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Features

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- 16 standard colors (.032 aluminum)

CIRCLE 81 ON INQUIRY CARD



Dental Offices of Manassas
Architect: Robert Loveless
General Contractor: Rector Construction
Roofing Contractor: GRC Roofing Inc.
Color: Forest Green
Profile: 24 ga. SNAP-CLAD

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CIRCLE 82 ON INQUIRY CARD

PRODUCT LITERATURE

Recessed downlighting
Lightolier's new full-color, 80-page Lytecaster catalog for recessed downlighting features detailed product specification information on the Lytecaster system; incandescent downlighting; low-voltage downlighting; and energy-smart downlighting. 800/215-1068. Lightolier, Fall River, Mass. CIRCLE 244

Pool products
KDI Paragon's catalog for 1998 features an extensive line of competitive and recreational swimming pool, deck, and underwater equipment, including starting platforms, lifeguard chairs, diving stands and towers, grab rails and ladders, custom railings, and underwater windows, lights, and speakers. New product additions include Track Start, a platform with a 24-by-32-inch top for extra-fast takeoffs; lifeguard chairs in an assortment of heights; a lookout chair with wheels; Quickset Anchor, a base for platform installation and removal; and custom railings made to customer specifications. 914/452-5500. KDI Paragon, LaGrangeville, N.Y. CIRCLE 245

Flooring display
Azrock, a division of Domco, has created a 4-foot-high, 2-foot-wide wall rack that displays the company's entire line of commercial resilient flooring. The rack holds 2-by-2-inch samples of each color and design of Azrock vinyl composition tile, Azrock luxury vinyl tile, and Azrock solid vinyl tile. 514/293-3173. Domco, Farnham, Que. CIRCLE 246

Concrete renewal products
Crossfield Products Corporation has published a brochure that describes the concrete renewal products available in its Miacote line of protective coatings, including 15 colors and finishes that simulate tile, brick, or stone; repair materials; and special membranes. 310/886-9100. Crossfield Products Corp., Rancho Dominguez, Calif. CIRCLE 247

Storefronts and entrances
Tubelite recently introduced its new storefronts and entrances brochure, which will be included in the *Sweet's General Building and Construction* directory. Descriptions and diagrams, as well as photographs, of each storefront and entrance are included. 616/832-2211. Tubelite, Reed City, Mich. CIRCLE 248

Low-E wall finish Web site
At the Web site www.radiancecomfort.com, browsers can see how to save up to 30 percent on heating and cooling bills with a new type of low-E interior wall finish. 800/766-6776. Chemrex, Inc., Shakopee, Minn. CIRCLE 249



For more information, circle item numbers on Reader Service Card

PRODUCTLITERATURE



Architectural hardware
The new catalog from Security Lock Distributors features a range of products, including Arrow's mortise locks; grade 1 and 2 cylindrical locks; interconnected locks; auxiliary locks; Arrow cylinders; high security systems; door closers; exit alarms, devices, and device trims; and Flexicore interchangeable core systems. Technical assistance is also available by phone. 800/847-6400. Security Lock Distributors. Pompano Beach, Fla. CIRCLE 250

Operable wall systems
Modernfold, a company that manufactures operable wall systems and accordion partitions, introduced its 1998 Sweet's brochure—a four-color, 24-page publication with details on the company's complete line of flexible space-division products and services. Included are the Acousti-Seal operable wall system, accordion partitions, and folding doors. The brochure also highlights Modernfold's newest product, Cascadia, a flexible wall system that vertically divides a room with the touch of a button and offers a strong, glass-panel design. In addition, the brochure describes the concept behind Modernfold's Service Centers, nationwide networks of service centers that offer response and maintenance information as well as assistance in selecting the optimal system. 800/869-9685. New Castle, Ind.
CIRCLE 251

Door products
The 20-page Ceco Door Products catalog includes specification information as well as important details on commercial steel doors and frames. The new Ceco Colorstyle doors are available in 13 colors. 615/661-5030. Ceco Door Products, a United Dominion Company, Brentwood, Tenn. CIRCLE 252

Landscape lighting
Architectural Landscape Lighting, a subsidiary of the JJI Lighting Group, has a new brochure available that details the company's complete BL-Series of building-mounted lighting fixtures. The full-color, 8-page brochure features application photos and close-up views of each model in the series. Information about construction, finishes, and product dimensions is also included. 714/668-3660. Architectural Landscape Lighting, Santa Ana, Calif.
CIRCLE 253

The 1998 blue book
More than 415,000 copies of the 1998 *Blue Book of Building and Construction* hit the streets last month, including a new Houston edition. Free on-line information can be found on the Internet at www.thebluebook.com. T Web site includes 550,000 listings, 30,000 display ads, and 12,000 company profiles. 800/431-2584. The Blue Book of Building and Construction, Jefferson Valley, N.Y.
CIRCLE 254

For more information, circle item numbers on Reader Service Card



Nikiski Pool, Nikiski, Alaska
Custom rails fabricated by KDI Paragon, Inc.

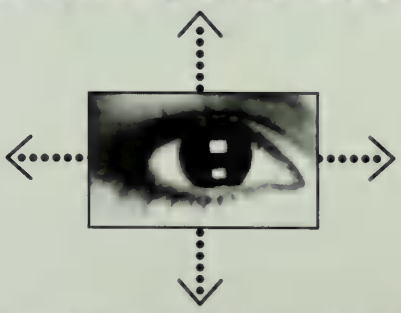
"Paragon swimming pool deck equipment is specified more than all other brands... because Paragon offers the greatest versatility in design, function and choice of materials."

Source: Penton Research Services

KDI Paragon Inc., 341 Route 55-West Wing, LaGrangeville, NY 12540-5105
Call for catalog and specifications on interactive AutoCAD® data disks.
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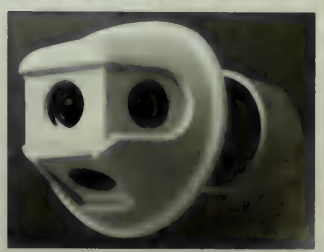
CIRCLE 83 ON INQUIRY CARD

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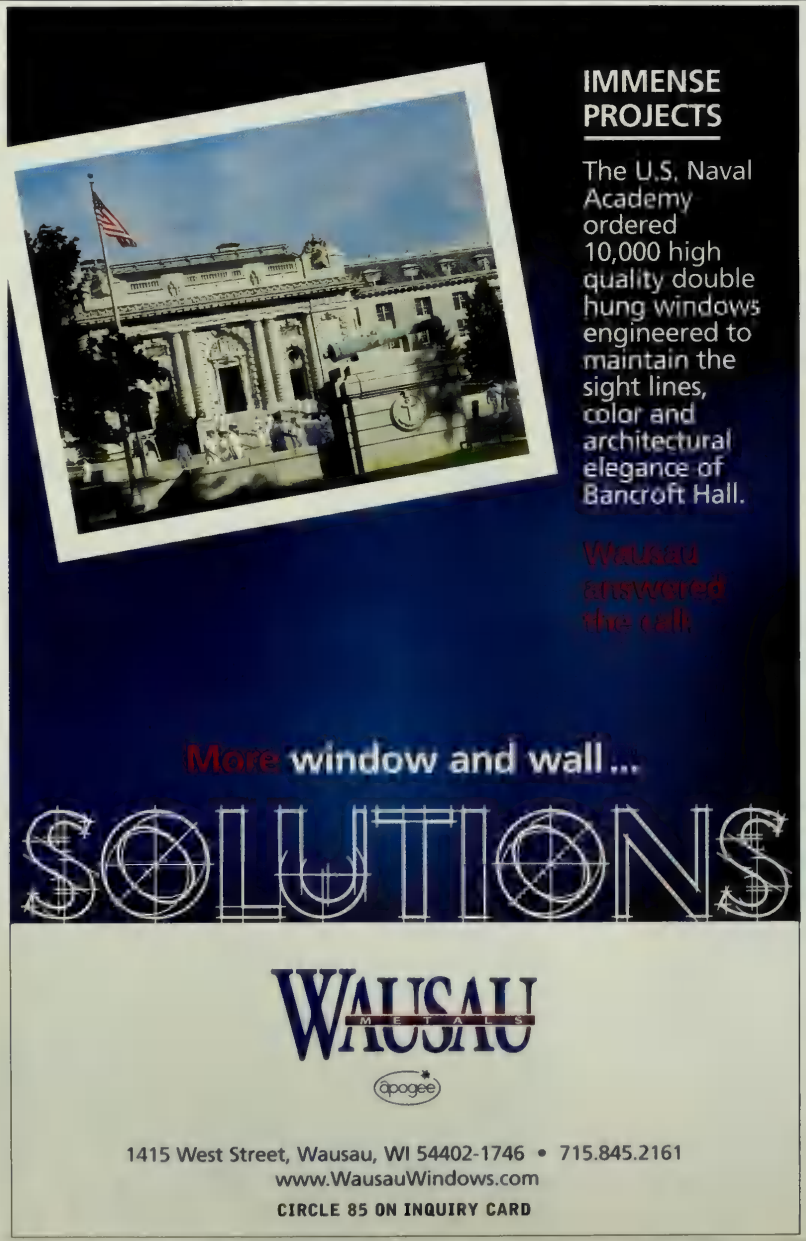
(*continued from page 46)*
pieces of furniture, 30 smaller objects, and 20 photographs of interior designs. This touring exhibition is the first major retrospective of the visionary designer's work. Grey Art Gallery, New York University. 212/998-6780.

Finnish Modern Design: Utopian Ideals and Everyday Realities
New York City
February 26–June 28
This exhibition of Finnish design from 1930 to 1997 features glass, ceramics, furniture, textiles, metalwork, and industrial design objects. Organized by the Bard Center for Studies in the Decorative Arts and the Museum of Art and Design in Helsinki. Bard Graduate Center. 212/501-3000.

Conference and Exhibition on Health Facility Planning, Design, and Construction
Phoenix
March 2–4
Sponsored by the American Society for Healthcare Engineering and the Academy of Architecture for Health, this conference for AIA PIA's features an exhibition devoted to health-care products, services, and technologies; the Exhibition of Architecture for Health; and the ASHE Project Team Vista Awards. AIA members may earn 28 Learning Units for their participation in the conference. For information or to register, call 847/384-7728.

Environmental Design Research Association Conference
St. Louis
March 4–8
The theme of EDRA's annual conference is "People, Places, and Public Policy." Research and design projects will be presented in papers, symposia, media presentations, and other formats. Design educators and professionals, planners, social scientists, and others interested in the relationship between people and places are invited. The conference qualifies for AIA Continuing Education credits. Contact EDRA, P.O. Box 7146, Edmond, Okla. 73083; 405/330-4863; or visit www.aecnet.com/EDRA.

General Contractors Convention
New Orleans
March 11–15
The 79th annual convention/Constructor Exposition of the Association of General Contractors will focus on legislative and political issues, business strategies, technology, and construction-industry programs. For convention information, call Rick Brown at 202/383-2757 or E-mail brownr@agc.org; for exposition information, call Rich Bohan at 202/383-2752 or E-mail bohanr@agc.org.



Competitions

Boston Society of Architects Awards
Housing and interiors deadline: March 1
Categories for the BSA's design awards program are housing (single- and multifamily) and interiors. Open to Massachusetts architects and architects who have designed projects in the state. The interiors category is also open to interior designers. Call the BSA at 617/951-1433 x221; fax 617/951-0845; or E-mail bsarch@architects.org.

New York State Council for the Arts Independent Project Grants
Application deadline: March 2
The Architecture, Planning, and Design Program of the New York State Council on the Arts announces the availability of grants of up to $10,000 for architects, designers, and scholars who are New York State residents. Projects in architecture, architecture history, landscape architecture, urban and rural planning, urban design, historic preservation, graphic design, and industrial design *(continued on page 245)*

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SCHOTT

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CIRCLE 86 ON INQUIRY CARD

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Italic: indicates Reader Service Number. Circle corresponding number on Reader Service Card to receive more information on this advertiser.

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(continued from page 238)
that advance the field and contribute to the public's understanding of the designed environment may be submitted. Contact NYSCA, 915 Broadway, New York, N.Y. 10010; tel. 212/387-7000; or fax 212/387-7164.

DuPont Benedictus Awards
Submission deadline: March 9
The 1998 DuPont Benedictus Awards for Innovation in Architectural Laminated Glass, sponsored by DuPont and the AIA with the support of the International Union of Architects, recognizes outstanding or significant commercial and residential architecture that uses laminated glass. Winners will be announced at the AIA national conference in May. Contact Stephanie Vierra at the AIA, 1735 New York Avenue, NW, Washington, D.C. 20006; 202/626-7446; or E-mail vierras@aiamail.aia.org.

Italian Ceramic Tile
Submission deadline: March 15
Assopiastrelle, the Association of Italian Ceramic Tile and Refractory Manufacturers, announces its 1998 design award. The $5,000 prize recognizes designers or architects who have created innovative settings using Italian ceramic tiles. Projects must be completed by February 28. Write Abbate Communications, 222A Sixth Avenue, 2nd floor, Brooklyn, N.Y. 11215; or call 718/783-3160.

Van Alen Prize: The East River
Registration deadline: April 8; submission deadline: May 20
The 1998 Van Alen Prize in Public Architecture calls for entries that investigate, envision, and promote the design of a better public realm for New York City's East River. Entrants may propose design ideas from the vast scale of the entire district to the minute scale, as long as the proposal is conceived as having an impact on the East River's identity in the city. Students, studios, faculty, and professionals from anywhere in the world may enter. Contact the Van Alen Institute, 30 West 22nd Street, New York, N.Y. 10010; fax 212/366-5836; or E-mail vanalen@vanalen.org.

Development of the Al-Riyadh District
Submission deadline: April 22
Al-Dar Real Estate Investments has announced an international architecture and urban design competition, with professional and student categories, to develop residential accommodations for Muslim pilgrims in the Al-Riyadh District, Makkah, Saudi Arabia. The design for the 3,500-square-meter site should be sympathetic to natural and environmental factors, fulfill the requirements of the pilgrims, and recall the local architectural and urban fabric. First prize for professionals is $50,000, for students $4,000. Contact Salihiyya Center, Office 702, King Abdul Aziz Street, P.O. Box 17871, Jeddah 21494, Saudi Arabia; tel. 966-2-644-4690; or E-mail aldar@mail.gcc.com.bh.

Vital Signs Student Competition
Submission deadline: June 15
The Vital Signs Project, administered through the University of California, Berkeley, announces its 1998 Student Case Study Competition. Undergraduate and graduate students in ACSA member schools of architecture and ABET member schools of architectural engineering in the United States, Canada, and Puerto Rico are asked to investigate, measure, evaluate, and report on the performance of existing buildings. Contact Gail Brager, Vital Signs, UC Berkeley, Berkeley, Calif. 94720; E-mail vitalsigns@ced.berkeley.edu; or visit www.ced.berkeley.edu/cedr/vs/act/act_main.html.

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CIRCLE 87 ON INQUIRY CARD

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "Lowering the Risks of Reroofing" (pages 141–44) using the learning objectives provided to focus your study.
- Complete the questions below, then check your answers (page 248).
- Fill out the self-report form (page 248) and submit it to receive two AIA Learning Units.

Questions

1. The penthouse suite of the Cosmos Building, a popular hotel erected in 1972, has developed roofing leaks. A quick visual inspection of the roof shows two skylights, a multilevel terrace with a partitioned lower deck housing a cellular communications tower, building-integrated photovoltaics, and rooftop HVAC equipment. Describe what to consider in a reroofing analysis for this facility.

2. Describe the resources available for commercial roofing from the National Roofing Contractors Association.

3. Summarize the suggested approaches for working with owners when selecting reroofing systems.

4. List five possible potential or existing roofing design problems that go beyond the scope of roofing itself.

5. Give two examples of building uses that affect roof selection and the degree of protection required.

6. Suggest solutions for the following environmental conditions that may damage roofs: a) high winds; b) a marine climate; c) chemical interactions.

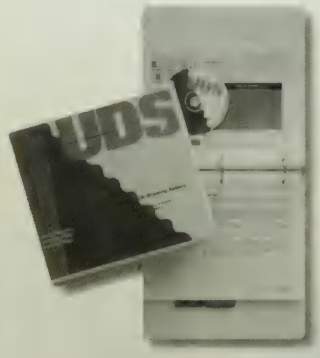
7. Explain what architects can do to prevent "roofer figure out" design and detailing errors.



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CIRCLE 89 ON INQUIRY CARD

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Questions appear on page 246. To receive CES credits, fill in the self-report form below.

1. Check and consider the existing roof-drain system with regard to sizing, placement, and current codes; the optimum location of skylights; the location of penetrations; whether rooftop items are really necessary; adaptation to building movement; substrate and material transitions; base flashings and termination details; antenna placement; whether the roof will accept a new covering or will have to be torn off; existing structural damage; the condition of decks; the presence of hidden conduits; and trapped wet materials such as insulation.

2. NRCA publishes a roofing manual and roofing-material guides, the *Handbook of Accepted Roofing Knowledge,* detail drawings on low-slope roofing on CD-ROM and for CAD systems, and maintains Project Pinpoint, a program identifying roofing problems and solutions using new technology.

3. Owners want to know options and cost estimates for balancing installation and maintenance life-cycle costs, energy-conservation performance, and the degree of protection offered by various membrane alternatives. In their recommendations architects should consider the building use, the client's financial circumstances, and the environment. Many large owners look for proven track records or choose a roof because it is easy to maintain a great number of buildings that have the same roof.

4. These might include structural modifications, thermal-insulation improvements, improved thermal-movement or seismic-movement control, and better handling of roof or attic ventilation, in addition to upgrading the structure to meet current codes and designing to reduce needed maintenance.

5. Buildings housing electronics, computers, and telephone equipment must offer absolute protection. Warehouses storing farm implements may need less expensive, low-maintenance roofs. Dormitories and college buildings may need to resist exhaust fumes, oil, and grease, which are detrimental to rubber roofing.

6. a) Recognize that some roof types (such as loose-laid membranes or metal roofs), when poorly detailed, have performed badly in high-wind locations. **b)** Specify bird-proof preventive coatings. **c)** Investigate the interaction of chemicals with membranes and look for alternative materials and coatings. When considering new technology, always look for a track record and supportive research.

7. Design reroofings based on cost efficiency with the proper material and wind-uplift requirements. Adequately detail drawings, avoiding excessive "RFOs." When referring to documentation, narrow down references as much as possible. Meet with the contractor and other relevant specialists and ask for information within their experience such as details for an expansion joint running into a wall, hazardous-material removal, or engineering applications. Standard details should be made project-specific rather than relying on generic manufacturer details.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only.)

Member information:

Last Name **First Name** **Middle Initial or Name**

AIA ID Number

Program/project title: Architectural Record (02.98)

Check the following as applicable:

☐ "Lowering the Risks of Reroofing" (pages 141–44)

☐ "An Integrated Design Approach Offers Flexibility, Economy, Durability" (pages 152–64)
Section sponsored by the Metal Building Manufacturers Association

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CIRCLE 90 ON INQUIRY CARD

REROOFING *continued from page 144*

problem. "They don't preclude the need for maintenance," explains Robinson; in fact, many are voided if prescribed maintenance is not performed. Warranties usually come in two types: materials only, which covers only defects in the membrane and related materials, and a system warranty, which covers defects in the material and installation of the roof membrane and related items supplied by the roofing manufacturer. Such warranties are useful because deficiencies are not always immediately obvious, explains Blaufeux. "The glue doesn't always hold. Adhesives and sealants may blister and form bubbles, but you may not see them until the sun beats down in spring and summer."

"A maintenance agreement provides a better value," says Robinson. "Most people are better off without a warranty." Some companies issuing 10-year warranties haven't been around for 10 years or lack the assets to back them up, for example.

"A warranty is a piece of paper that doesn't keep water out," says Cash. "The typical manufacturer's warranty is not written to serve the owner but to limit the exposure of the manufacturer," adds Robinson. "Warranties rarely cover related damage," he says, such as damage to insulation or roof decks. Some manufacturers' warranties limit liability to cost of material replacement only, excluding labor and related materials, or to costs at the time of initial installation, without allowing for inflation. If owners do not choose a warranty, they may have to sue for relief, if, for instance, a loss of business occurs due to a faulty membrane leaking into the interior. HNTB's Frerking observes: "A warranty is like an insurance policy; you should design a roof so you never have to use it. Most warranties help sell a product and aren't worth it."

Maintenance agreements represent an ongoing cost, but the owner is assured of timely recognition of problems. According to the NRCA's Robinson, a maintenance agreement should include a twice-yearly roof inspection, roof maintenance work, and a schedule of what is to be inspected. Typical maintenance should include cleaning out drains, gutters, and scuppers; checking for proper roof drainage; repairing any minor flashing damage; replacing gravel or ballast where it has scoured; renewing coatings on flashings; checking for damage by other trades, such as repairs to rooftop HVAC systems; and checking flashing near roof penetrations, where leaks often first appear.

Manufacturers have increasingly stressed regular roof inspections and attention to maintenance, but most owners still don't visit the roof unless there is a problem, experts agree. But they also say a preventive-maintenance program is the best way to ensure roofing longevity. Once- or twice-yearly inspections are sufficient for most buildings, but more frequent checks are warranted when there are major storms, vandalism, or foot traffic. In rainy areas of the Pacific Northwest, notes Bensimon, plants—even trees—promptly germinate on roofs where natural debris has been allowed to accumulate.

He recommends the following roof-maintenance strategies: limit roof access to key personnel, and hold them accountable for maintenance; provide access-control systems to keep track of who is going onto the roof; standardize roof systems and materials within a campus to facilitate training in maintenance, repairs, and quality assurance; supply maintenance personnel with repair kits and complete information, and train them to observe and document roof conditions; implement a seasonal maintenance strategy to allow for winter preparation, spring cleanup, and documentation of items for summer maintenance and repair. ■

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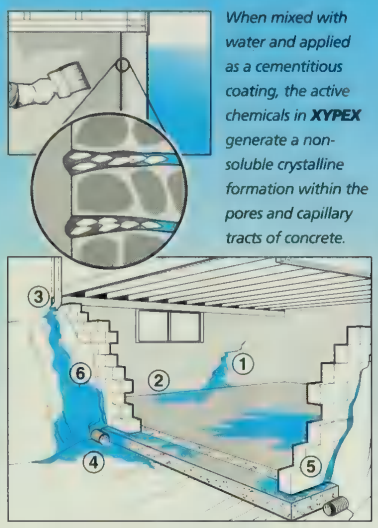
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CIRCLE 93 ON INQUIRY CARD

VENTURI *continued from page 67*

RECORD: Did the Philadelphia Orchestra reject a design that rendered the budget limitations palpable rather than—let us postulate—disguising them?

RV: The design was not just reflecting the budget issue, even though that is extremely important. At the early stages, Broad Street was a civic monument kind of street and our project would have enlivened it at night. Later it was reconceived as the "Avenue of the Arts" [intended as the new location for several arts facilities], and we loved making a more gala facade [see page 60].

There is an irony that our buildings are often seen as not flashy enough. But at other times they say we are too flashy in a vulgar and commercial way, not in an architecturally expressionistic way. Interestingly, according to [University of Pennsylvania architectural historian] George Thomas, [original architect] Napoleon LeBrun said of the Academy of Music [the city's beloved landmark concert hall, completed in 1857] that he did not have enough money to do anything but a market house. The academy is only a little more elaborate than that.

RECORD: You also used a billboard approach at the Whitehall Ferry Terminal project [see page 61]. The competition scheme showed a giant LED clock, scaled to the skyscraper context. That scheme was reduced to a wavy-parapeted front. Critics found it aggressive if not somehow insulting.

RV: The Whitehall project was criticized for not dealing with issues of convention and scale, but that was a misreading. I have a feeling that architects are not dealing with the issue of what civic architecture is. They have such a desire to be so expressionist or individualistic that they make buildings that are not civic architecture by nature.

RECORD: What makes architecture civic?

DSB: It probably relies on convention. You could say it is not conventional to put an electric sign on a building, but electric signs exist. Let's say the New York post office, with its grand steps along the entire block, is civic. But it's not appropriate for today. Civic architecture is not really being faced in terms of needs.

RECORD: In discussing the idea of applying information to a generic building, you justified it in part because people "wear" information in the form of T-shirts with slogans on them. Isn't the resistance you've met from clients in part a reaction to the idea that you might give them the architectural equivalent of the T-shirts people wear around the mall?

DSB: If clients are horrified and usher us out, so be it, because the relationship will not work out. We have to be who we are. But when clients want to be challenged, we go on a journey together; we may face something that at first seems awful, but we are going on an adventure. For the people we work best with, architecture is terribly important as a symbol of what they're doing.

RV: We could not in the end continue with one design because advice from the campus designer was antagonistic.

DSB: The irony was that it was Postmodernist criticism . . .

RV: It's ironic when your ideas are misinterpreted and used against you.

RECORD: Paul Rudolph's passing in 1997 was greeted as if we had lost one of architecture's enduring masters. In puncturing the "heroic" trend of Modern architecture in the 1960s, you made Rudolph one of your prominent targets. What do you make of the Rudolph revival?

RV: I think it reflects the cycle of taste to some extent. The *béton brut* he did was sort of Corbusian. Now Ando does it. He was a kind of revivalist. Call it a survival of the revivalist.

RECORD: Speaking of revivals, is the blurring of entertainment, retailing, and culture simply the belated vindication of ideas you've long promoted? Is, for example, an All-Star Cafe your NFL Hall of Fame proposal 30 years later?

SI: They are so literally alike that the jaw drops. You recognize that one could not have happened without the other. It is a total vindication. There it is, all around you. We weren't the ones to do it, and that hurts. But you realize in a sense that you have won.

DSB: In another sense, the Modernists have won. What we recognize is that the shed we so often work with is essentially a Modern building.

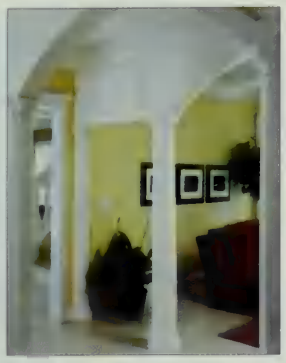
RECORD: What kind of project would you like to do that you have not yet done?

RV: I'd like to do a skycraper, but also a Catholic church. I'm not a Catholic, but I have been powerfully influenced by them, especially from my time in Rome.

DSB: I'd like to do a synagogue, both because I'm a Jew and because it is frangible. There's such a strong idea of what a church should be, but a synagogue is a meeting house. There's so much available to it. ■

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Total Door® is a fire rated door assembly that includes all hardware. Pairs do not require coordinators, vertical rods, astragals, flush bolts, or floor strikes. Will retrofit to any frame. Meets all codes and ADA. Wood and metal faces available to 3 hours. Lifetime limited warranty on locks and panics. For more information call 1-800-852-6660.

Openings®

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Concrete Waterproofing by Crystallization



Applied as a slurry coating Xypex is a chemical treatment that waterproofs by penetrating the concrete with a crystalline formation that "plugs" the pores of the structure preventing water seepage. Xypex is ideal for use on the "inside" of wet underground structures.

Xypex Chemical Co.

CIRCLE 153 ON INQUIRY CARD

Custom Metal Graphics



These bronze elevator door facings were manufactured by Surface Design + Technology specializing in custom & standard metal graphics. Using sheet metal finishes of a variety never offered before. There is virtually no limit to the types of patterns which can be created by combining multi-directional satin brushing, electroplating of gold, nickel, or copper. For information on custom or standard designs call (800) 537-1127.

Surface Design

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Accessible Lavatory Insulation



A full color catalog will explain the different Handy-Shield safety covers offered for the new or retrofit projects that need to comply with the American Disabilities Act. The specific use, sample specifications, drawings and color choice are all summarized in this easy to understand catalog. (800) 475-8629.

Plumberex

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New Fireplace Tested as a Wall Furnace

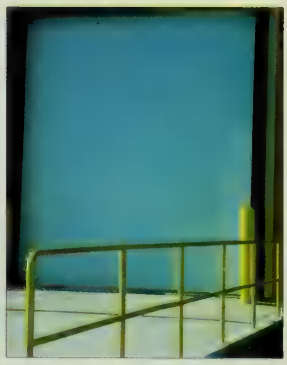


Our products have taken direct-vent technology & incorporated it into a new high performance fireplace. Model 6000 Supreme is a high efficiency fireplace (thermal efficiency up to 74%) & has an AFUE (Annual Fuel Utilization Efficiency) rating of 63%. The 6000 Supreme is standard with a variable regulator to adjust the flame & BTU input with the turn of a dial. Heat-N-Glo, 6665 West Hwy 13, Savage, MN 55378, 1-800-669-HEAT.

Heat-N-Glo

CIRCLE 156 ON INQUIRY CARD

Atlas Door™ Insulated Sectional Doors



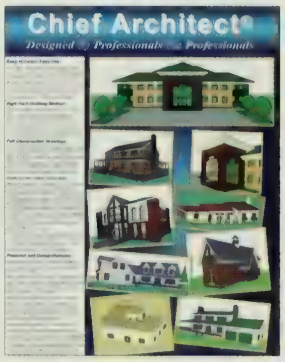
High quality, insulated thermally broken steel doors, manufactured by Clopay Building Products Company, offer maximum energy efficiency in an insulated door. These upward acting sectional doors provide R values up to 12.15, exceptional sound insulation, and have been engineered to meet or exceed the highest industry standards.

Clopay Building Products

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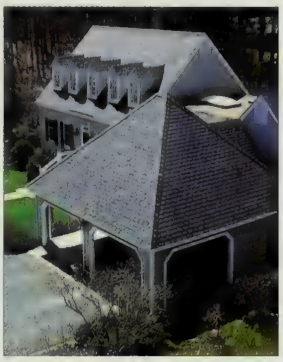


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ART

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Buckingham-Virginia Slate



has been sheltering America for over two centuries. As a roofing material, it is prized for its high mica content, natural cleft and texture, as well as its non-fading and distinctive handmade quality. Because of it's permanence and natural beauty, it was specified by Thomas Jefferson in the 1800's and remains today the roofing choice of eminent architects. Buckingham-Virginia Slate, P.O. Box 8, Arvonia, VA 23004. T: 1-800-235-8921.

Buckingham-VA Slate

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Mortar Net Green



is placed on top of the flashing inside the cavity, where it catches & permanently suspends mortar droppings above the level of the weep holes. Its patented dovetail shape prevents mortar from forming a dam, its shape with its 90% open weave allows water & air to eas-ily move through the net & out the weeps. It's 100% recycled non-degradable polyester and is available in a 2-inch width. For a CAD disk, call (800) 664-6638.

Mortar Net

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Ornamental Picket Fence with a Purpose



We have given special attention to each & every component of our fence. Every item is designed for strength, durability and low maintenance. No other company builds a complete fence - rail, rivets, brackets, pickets and posts, that are stronger, more durable, have more security or lower maintenance costs than our fences. Monumental Iron Works, 6500 Eastern Ave., Baltimore, MD 21224. Tel: (410) 633-6500, Fax: (800) 239-2963.

Monumental Iron Works

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Lav-Shield™ Lavatory Protective Enclosure



Another ADA undersink solution from TRUEBRO is the all new Lav Shield™ under lavatory enclosure. Designed to meet the aesthetic and dimensional criteria for accessible lavatories where insulation cannot adequately cover electronic faucet connections, mixing valves, trap primers and instantaneous hot water heaters the Lav Shield™ performs while providing knee and toe clearances for wheelchair users.

Truebro, Inc.

CIRCLE 162 ON INQUIRY CARD

New Pemko Full Line Catalog



Among the new products featured in Pemko's 135 page 1998-9 catalog, are HSS2000 (an intumescent fire life-safety product), FG3000 (an amazing glazing compound which allows for much larger lites in rated doors), security door bottoms to deter lever handle break-ins), new special purpose continuous geared hinges, ADA compliant rubber and aluminum ramps, as well as expanded brush products.

Pemko

CIRCLE 163 ON INQUIRY CARD

New Invisible Products Roll Out



3 new invisible products have been added to the family of Grasspave² & Gravelpave² - Slopetame², Draincore², & Rainstore³. For 16 years we have provided grass paving ring structures with 92% void area for root development. Now we're applying this technology to erosion control, drainage, & water storage with easy installation in 9 roll sizes. Call our knowledgeable staff for CADD details, specs, & product specs at (800) 233-1510. Web Site: http//:wwwinvisiblestructures.com

Invisible Structures, Inc.

CIRCLE 164 ON INQUIRY CARD

Jacuzzi Whirlpool Bath



Jacuzzi Whirlpool Bath — presents The 1998 International Designer Collection of whirlpool baths, faucetry and the J-Dream™ Family of shower systems. This full-color catalog features beautifully styled products, integrating the most innovative luxury features. For more information please call 1-800-288-4002. (www.jacuzzi.com). Catalog free of charge.

Jacuzzi

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Ludowici Roof Tile



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CertainTeed Corporation

CIRCLE 166 ON INQUIRY CARD

Celadon™ Ceramic Slate™



A kiln-fired, interlocking clay roof tile designed to look like thick slate with a breaking strength greater than 300 pounds; impervious to freeze-thaw degradation with less than 1% moisture absorption; color will not fade, flake, or effloresce—offered in slate gray, slate red, montpelier green, plumstone, and brunswick black. Sixty-year limited, transferable warranty.

CertainTeed Corporation

CIRCLE 167 ON INQUIRY CARD

PORCH-LIFT® Vertical Platforms

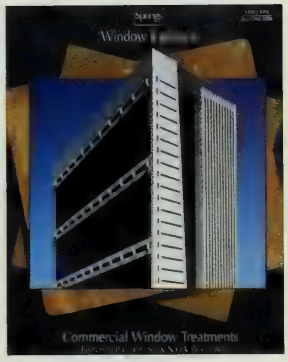


PORCH-LIFT® Vertical Platform Lifts form Access Industries are designed to raise and lower a wheelchair user from one level to another indoors and outdoors for public buildings of all kinds. Easy to install and operate, the lifts require little to no site modification to install next to stairs or a landing. Standard models can be installed in a custom hoistway (shown above) to blend with any building design or accessability plan.

Access Industries

CIRCLE 168 ON INQUIRY CARD

Manufacturer of Bali, Graber and Nanik

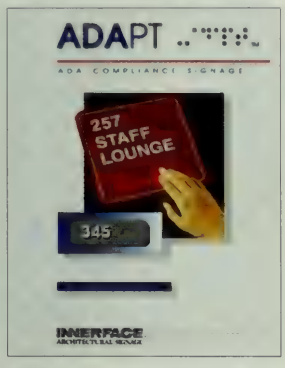


Springs Window Fashions manufactures Bali, Graber and Nanik commercial window treatments, including horizontal/vertical blinds, cellular/pleated shades and drapery hardware. Aluminum blinds feature antistatic paint finish to help repel dust. Privacy slats available on S3000 mini blinds. Architects/specification writers, call SpecFax (800) 327-9798 for specification sheets or technical advice.

Springs Window Fashions

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PG Bell

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Hadrian Inc.

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Pan-Tech



manufactures composite building panels in a variety of different face materials and finishes. Aluminum: two, three and four coat Kymar finishes, anodized, colour & brushed. Stainless Steel: 304, 316 grades, #4, #8 finish, coloured stainless and patterned. Zinc: Rheinzink preweathered. Porcelain: for Spandrel applications. Copper: prepatinated.

Pan-Tech, Inc.

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CIRCLE 178 ON INQUIRY CARD

Architectural Bird Control

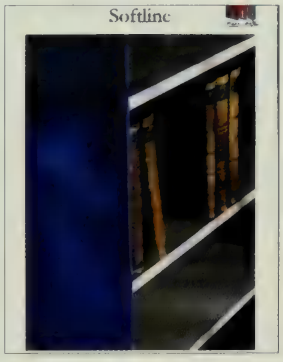


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Tortran, Inc.

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Ushio America, Inc.

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Cost-effective durable, attractive, & strong describe Lexington Standard's aluminum lighting standards. Models include round tapered/ straight /decorative, square, hinged, & embedded. The wide range of finishes & colors appeals to architects; contractors appreciate the ease of installation; distributors are attracted to the economical prices; owners enjoy a product that's virtually maintenance-free.

Lexington Standard

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Bruck Lighting USA

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Sun Valley Lighting

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Hydrel

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THE FUTURE A money revolution: When architects cash in on energy-sensitive design.

BY B.J. NOVITSKI



Imagine a future in which architects do well by doing good. They devote time to carefully integrating all the energy-related systems in a building, the resulting efficiency dramatically decreases our dependence on imported oil, and the triumphant architects are gratefully rewarded with higher design fees. That future may not be far off, says physicist and energy activist Amory Lovins. However, he cautions, it will require changes in the way buildings are planned, financed, and operated.

Architects have long been trying to make buildings less wasteful, and many are sincere in wanting to help ease energy-related problems. Why, then, do many buildings still barely meet minimum energy standards? Lovins argues that conventional practice rewards inefficiency. For example, developers seek to minimize first costs and leave it to others to pay future utility bills. Lenders favor known technologies, like mechanical equipment, over efficient ones, like passive solar design. Architects have no incentive to spend the extra time needed to minimize life-cycle costs if design fees are based on construction cost. We need to remove the disincentives, Lovins says, and establish a system of substantial rewards for energy-smart buildings.

Researchers at Lovins' Rocky Mountain Institute, a nonprofit research foundation, are developing model contracts to test this idea. They secured funding from San Francisco's Energy Foundation, which supports sustainability projects, and sought out four buildings as test cases in four climate zones. Under construction are a New York high-rise office; government buildings in Austin, Texas, and Oakland, California; and a school in Portland, Oregon. The architectural research firm Eley Associates developed the contract for the Oakland building (photos above and below), designed by Denver's C. W. Fentress J. H. Bradburn and Associates. Eley and his staff created a computer model of the building's energy consumption at several phases and will continue the evaluation through the first few years of occupancy.



Lovins's concept for performance-based fee contracting is founded on rewarding architects and builders for meeting specified energy goals and penalizing them for failing to meet these goals. The bonus could be a substantial proportion of the design fee. The penalty could be uncompensated design time or a cash rebate to the owner. Building owners would offer the bonus because they would pay less in the long run. The gamble would be worthwhile to architects who know how to optimize a building for low-energy consumption. The bonus pays for more time in schematic design, when attention to building form, siting, orientation, and the configurations of glazing and interior walls can have profound effects on daylighting and future energy consumption. If these are ignored, no superficial design treatments will make up the difference. Also, the reward system enables engineers to spend more time on analyzing, selecting, and sizing less expensive and wasteful equipment.

Performance-based fees are easier to implement for energy retrofits. Whether or not a building improves should be measurable by comparing utility bills before and after. With new construction, such a comparison is unavailable, so there is a greater reliance on computer modeling. The buildings included in Lovins's experiment will be analyzed at several phases. And because the theoretical parameters of occupancy, scheduling, and weather may not match the reality of the building after it's occupied, the model will be revised several times during and after commissioning. The building's performance in its second year, compared to a theoretical baseline building, will determine whether the design team earns the bonus.

Exactly how that bonus/penalty is computed is based on many factors, including the legal structure of the design/construction team. Eley Associates developed a manual of model contract language and computational models for builders, construction managers, and owner/architect/contractor triangles; it is available at www.eley.com.

For the Oakland Administration Building, the energy performance target is about 30 percent more stringent than minimum requirements. Fentress Bradburn complied with a variety of measures, including limiting electric lighting to about one watt per square foot and minimizing solar heat gain. Although the final test won't come until after the building has been occupied for a year, so far it has met the energy goals in computer simulations.

It would be difficult for an architect to predict such positive effects, much less guarantee them, but it's a rosy future to contemplate—rational fee structuring in all areas, not just energy consumption, that will truly reward architects for good design. ■

B. J. Novitski is a freelance writer specializing in architectural technology, practice, and education.

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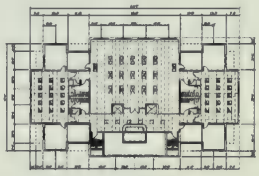
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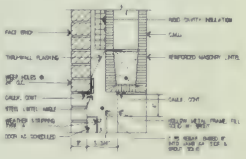
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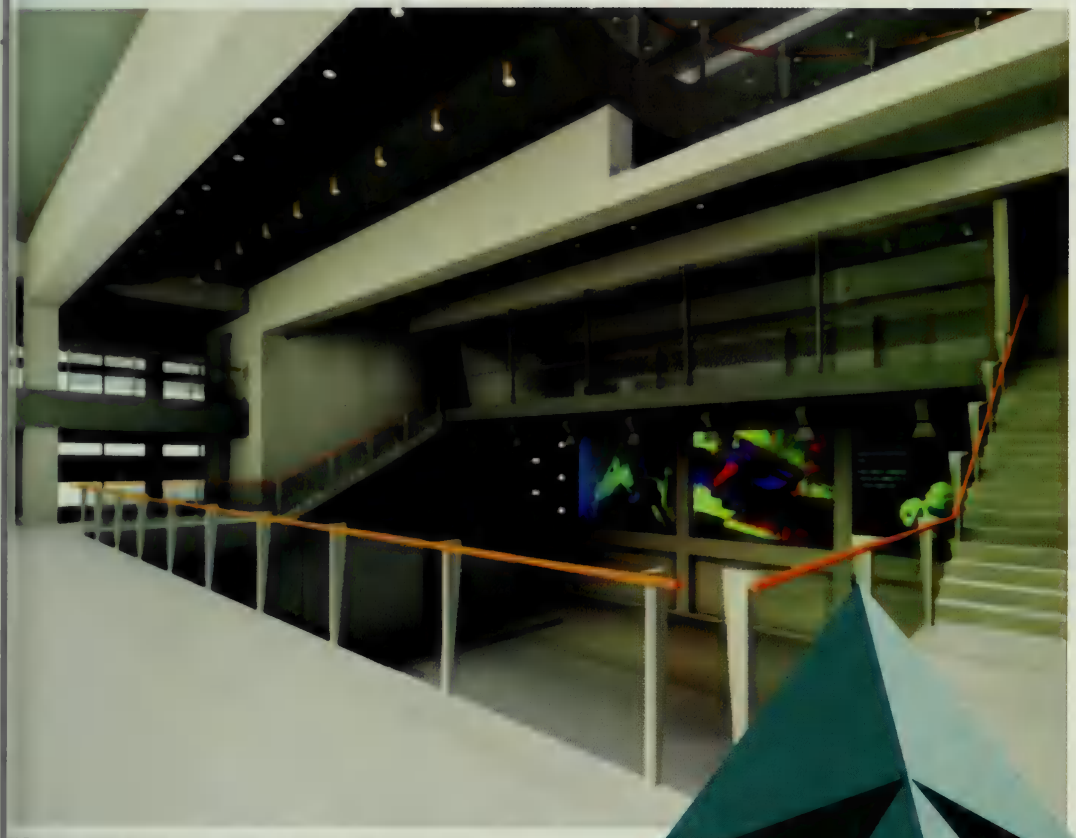
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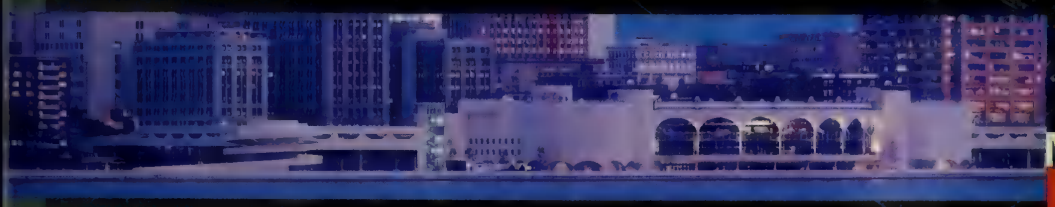
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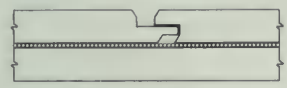
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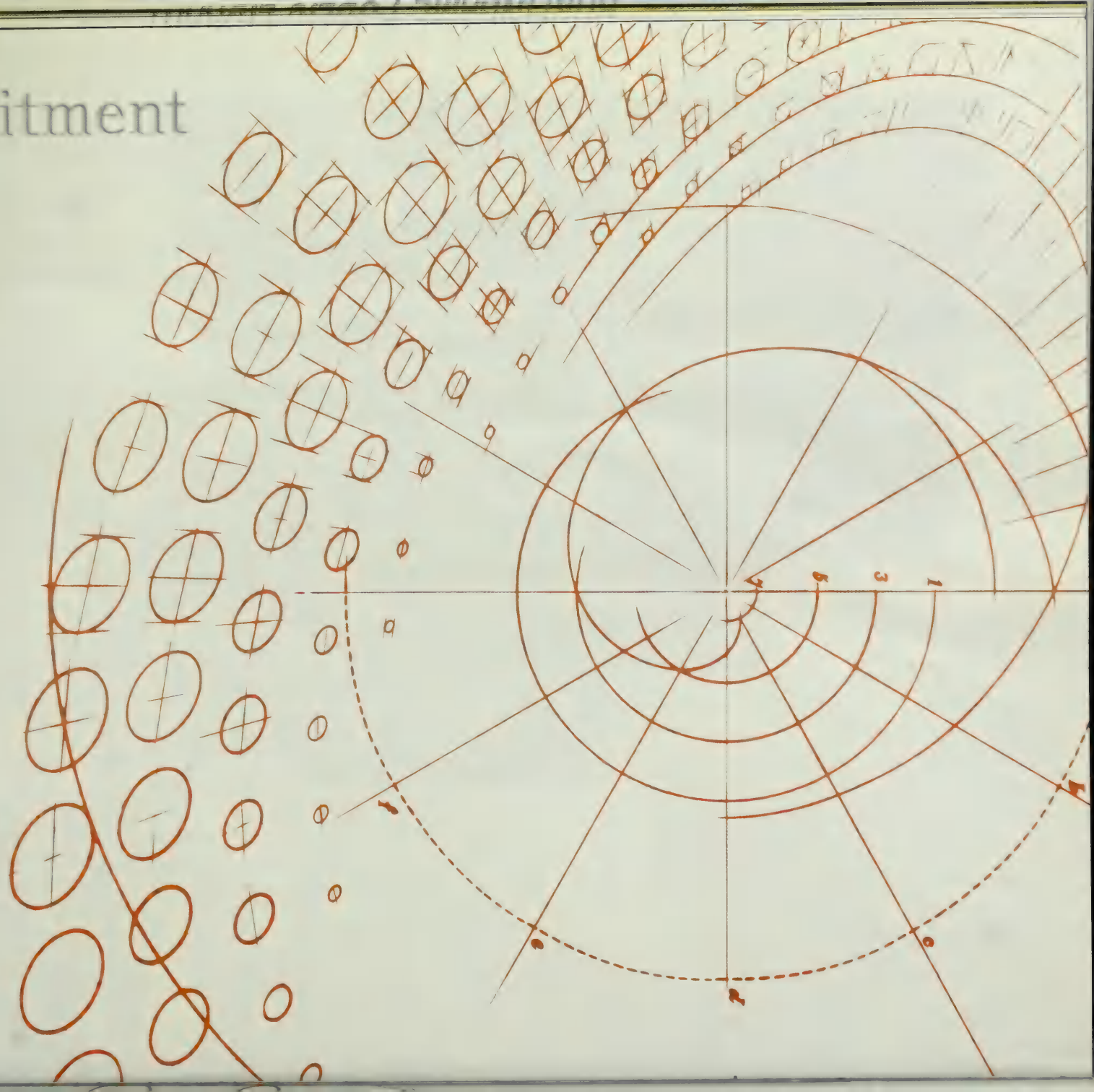
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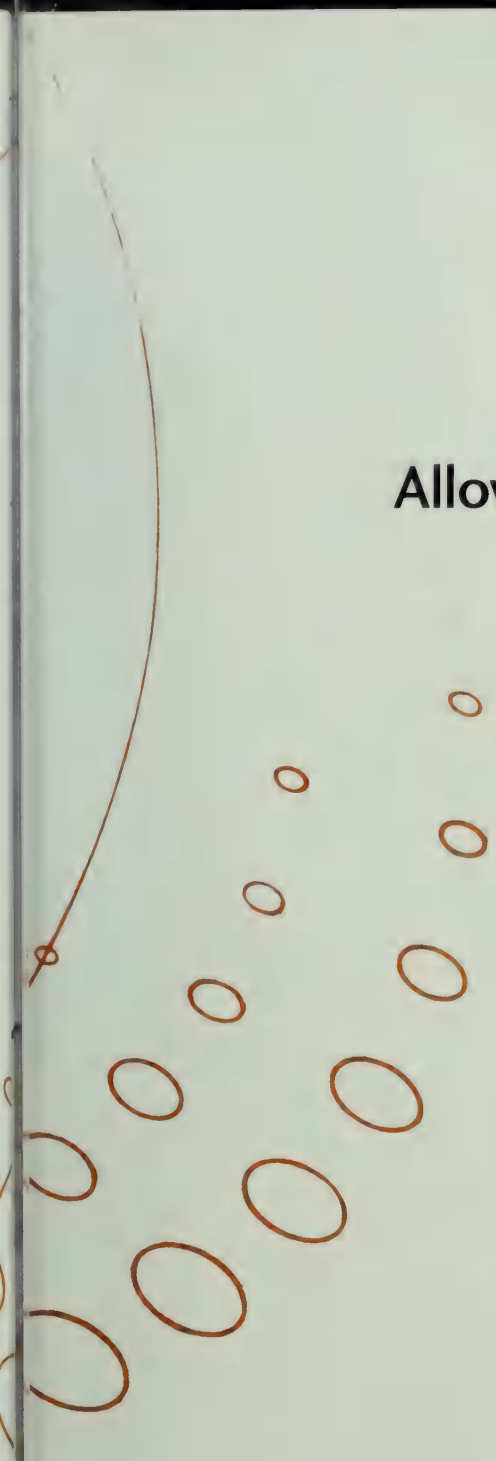
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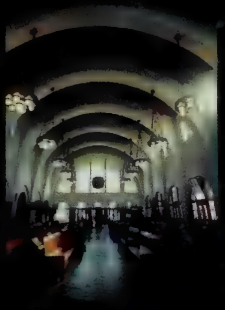
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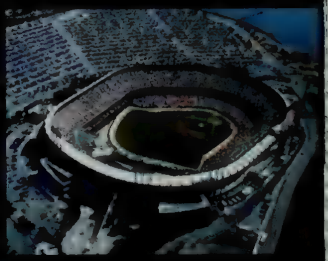
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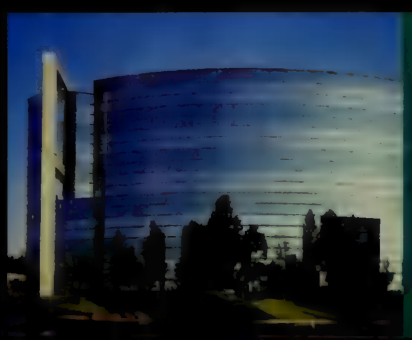


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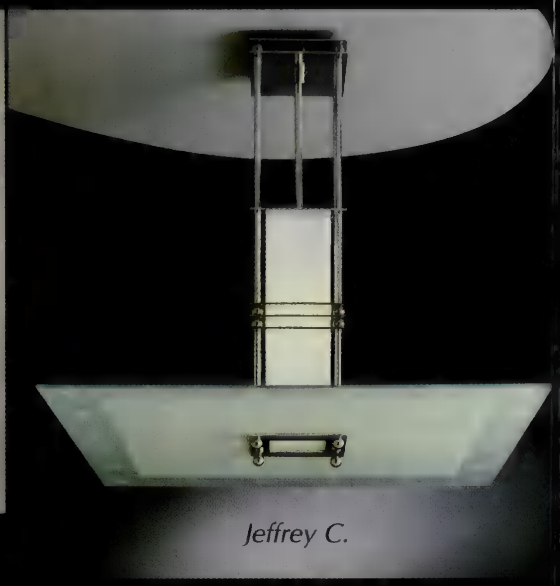
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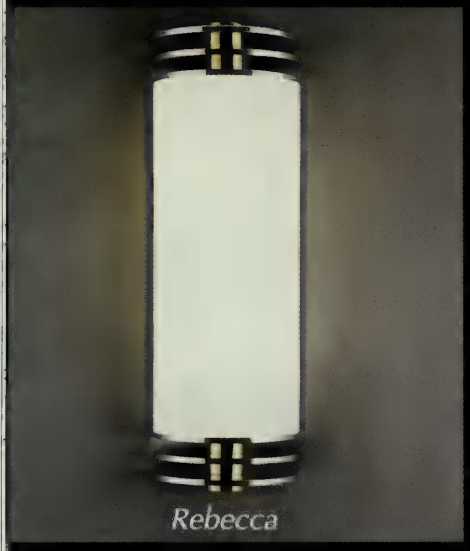
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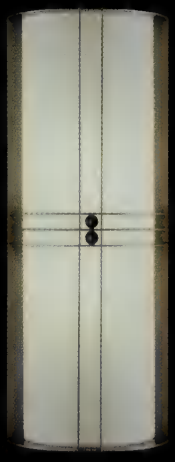
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CIRCLE 5 ON INQUIRY CARD



EDITORIAL

Prudence in Good Times

BY ROBERT A. IVY, FAIA

Have you caught yourself daydreaming recently about the jazzy new BMWs? If so, know that your automobile mania is shared by many architects, symptomatic of an optimistic spirit at a moment of success. Your fascination underscores the larger truth: that prosperity has arrived for architects. There are individual exceptions, but the fact is, these are good times. The indications are irrefutable.

First, the Dow Jones and Standard & Poor's indices have broken record highs. Statistics confirm that architects are profiting from this boom: according to AIA statistics, we added an average of 3,000 jobs per annum to architectural firms during the last decade, and 1,400 more employees should join the payrolls every year in the future. Construction starts are strong nationwide. Even California and Massachusetts, hard-hit in the late '80s and slow to recover, are rebounding.

Good times take effort to sustain, however. Architects continue to complain of tight margins and heightened competition. The most persistent question raised by firm principals when they gather seems to be, "Where can I find good, experienced employees?" Many younger architects dropped out of the field during the late '80s and early '90s, leaving a gaping void in our current hiring pool.

Management seems to be in a hiring frenzy, characterized by more aggressive recruiting techniques. Headhunters now routinely lure experienced architects away from current jobs with promises of higher salaries and sign-on bonuses. Recent graduates with strong computer skills and little experience find themselves actively recruited and moved cross-country.

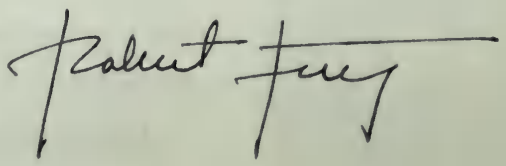
Architects treated like star athletes? Hold everything! News this startling demands a second look. What follows are pointers to help shift your focus from immediate gratification to longer-term reality. While this advice may seem astringent, it could encourage valuable strategic planning:

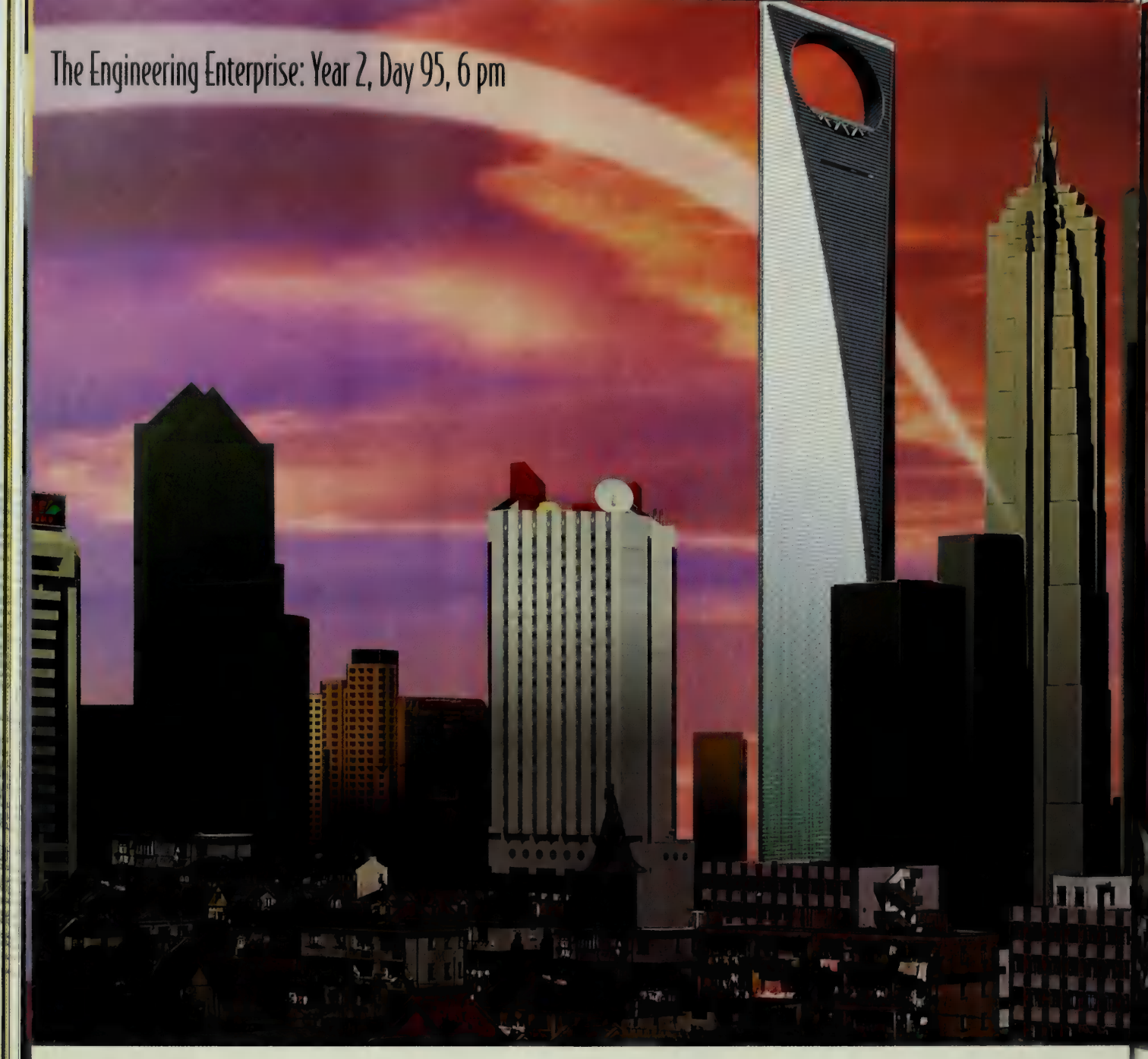
Remember the realities of the marketplace. Our collective economic life in the construction universe follows a sine curve like a powerful wave, and no wave ever rose continuously without breaking. Remember, too, the taste of the recession and the salty tears—not just your own—when your boss had to cut back on an inflated staff.

Exercise prudence. Watch hiring levels. Bank your money. Don't overextend staff size or credit. Both can come back to bite you. Friendly bankers quickly grow cold and stare hard over their glasses as loans draw due. Make careful choices. Learn to say no to nonproductive jobs or difficult clients. This can be an architect's hardest lesson.

Plan for change. What equipment will enhance productivity? What steps will encourage orderly firm succession and allow for retirement for the partners? What training will better position the company for shifting roles and markets? What new areas of concentration will broaden the firm's opportunities? How, after effort and time, should your new-found resources be deployed?

Architects deserve to plan for their own companies as well as they plan for their clientele. A consultant might help clarify objectives and set priorities for your own organization's careful, sustainable development; that is, after all, what architects do for others. Something a consultant cannot do, however, is to offer advice about whether it's time for your personal Euro dream machine. Just be sure to consider a nimble, affordable vehicle that can maneuver the slippery downward slopes as well as the peaks.



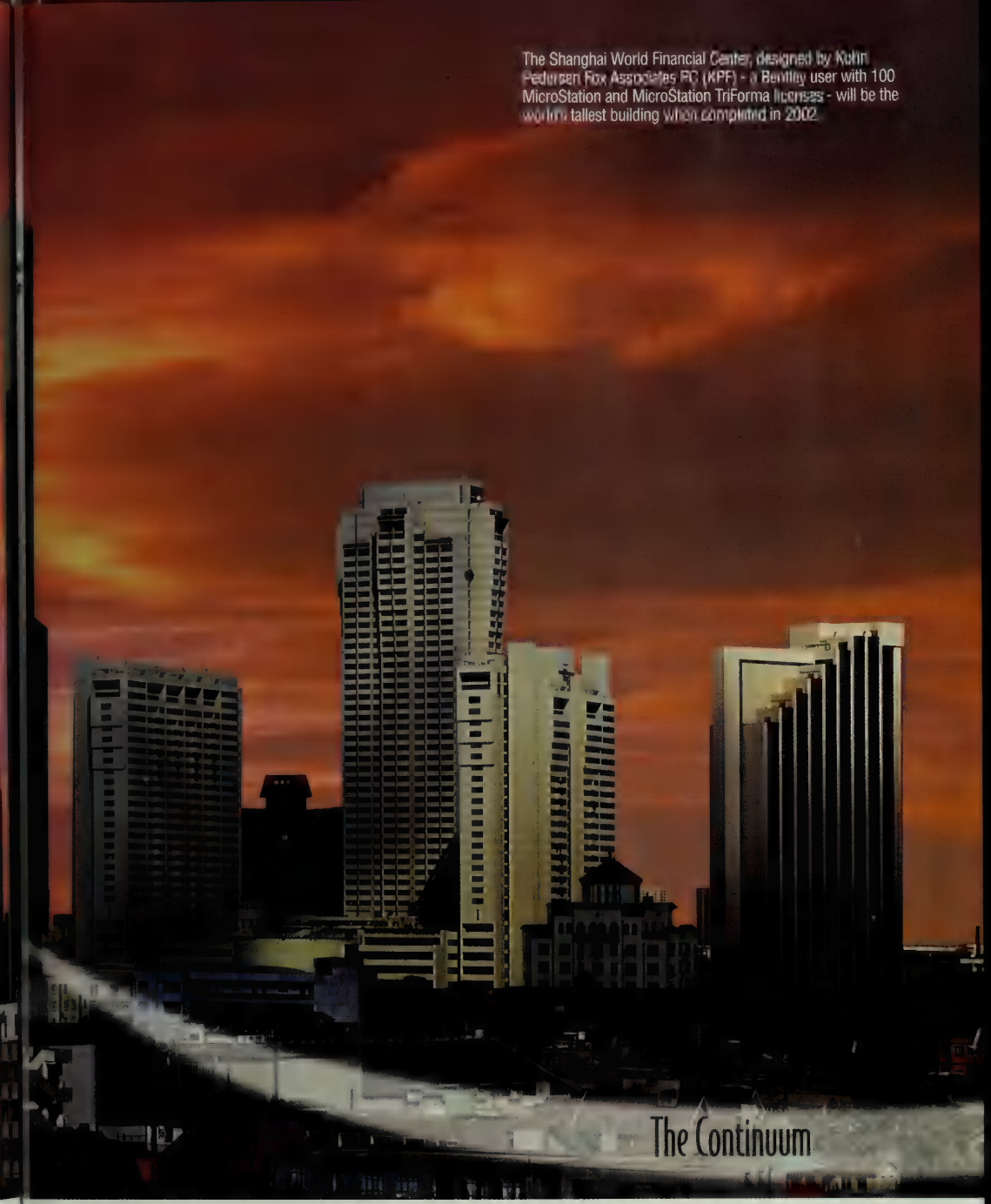


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LETTERS

More on the A.R.E.

There are tangible benefits to NCARB's computerized licensing exam—the greater number and better distribution of test sites, the increased frequency of exams—but they are not the ones Ann Chaintreuil stresses in her defense of the exam [Letters, January]. She claims that the fundamental advantage of the computerized exam is that it has eliminated the "gray area" that once separated passing and failing. But the uncertainty that she's trying to eliminate is what makes evaluating architectural quality different from grading a math test. There is never a clear line between designs that work and those that don't. That is why experienced human architects provide the best system for grading.

Chaintreuil also claims that the new exam "closely resembles" practice. Wrong again. Practicing architects don't receive complex design problems predigested for them into discrete single-issue vignettes. Past exams, with one comprehensive design problem, were much closer to the real problems architects must master. Furthermore, pencil and paper continue to be the tools of choice for preliminary design in the profession and the schools, and they are likely to remain so, despite the relentless hype promoting the computer.

Instead of defending their misstep, NCARB, and the profession as a whole, should be asking if the growing influence of the organization's bureaucracy—and the reductive vision of "architecture" it promotes—truly serves the best interests of the public, the profession, and the discipline.

—Daniel Willis, AIA, and Amy Forsyth
Department of Architecture
Pennsylvania State University
University Park, Pa.

Your recent poll on the A.R.E. clearly showed the unfairness of the current exam. Chaintreuil's letter states that the new exam is better than the old, but it has actually made things worse for our interns. NCARB does not seem to understand that most interns are not able to pay for the overpriced exam and that they are screaming for a better deal. Why is no one listening?

I recently passed the exam and became a licensed architect. This would not be the case if I had not taken most of the exam in the paper-and-pencil format, with only a couple of sections required on the computer. I never would have been able to afford the cost of taking the new exam.

As co-chair of the National AIA Intern/Associate Committee, I hope to work with the AIA, NCARB, and our profession to address the A.R.E. dilemma, and I look forward to finding solutions soon. I am very concerned that nothing is changing and that the system is collapsing.

—Peter Levasseur, Associate AIA
Portsmouth, N.H.

I recently read the article that appeared in your April 1997 issue entitled "How Many Times Is Enough: A Designer Who Has Failed the NCARB Design Exam 30 Times." In the professional engineering exam, a test taker may ask to see his or her test and the method used for scoring. (In New York there is a small fee to do this.) I know of at least one case (not mine) where a visit to the State Education Department to review the applicant's answers on the test proved beneficial in revealing what areas the test taker was in need of improving. This beats the shot-in-the-dark method of repeatedly taking a licensing test. Test takers may believe they are strong in areas they are actually weak in, according to the grading system used. If a similar program existed for the NCARB exam, it would prove more enlightening than repeatedly taking licensing review courses.

—C. Ellis, P.E.
via E-mail

Applying architectural skills

I agree with Lee Waldrep [Speak Out, January] about how valuable skills learned in architectural education can and should be applied to careers in other disciplines. He writes, "One need not become a licensed, practicing architect to make a contribution with these skills." Unfortunately, the architecture profession in general does little to support this view.

Many states do not allow unlicensed individuals to use the title "architect." Since licensure can be achieved only through traditional practice, many architectural graduates are forced to take that career route so that one day they may use the title for which they have worked so long in school. The AIA promotes this train of thought by offering full membership only to licensed individuals. If the profession were truly proud of its "broad, creative, problem-solving skills," it would not exclude those who exercise them through alternative careers.

—Lisa Chronister Gray, AIA
Oklahoma City, Okla.

The status of the intern

In your January Letters column, Stacy Rudd said that after completing the Intern Development Program she was not ready to take the A.R.E. exam, having spent much of her internship "drawing stair and toilet details." It is apparent that this was not a proper internship. Not only are interns required to fulfill value units in areas from programming to construction administration, but these units are to be documented and signed by sponsors and advisors.

In addition, although architectural firms are supposed to provide the opportunities for an intern to gain broad experience as defined by NCARB, it is the intern's responsibility to track his/her training based not only on the IDP requirements but also on his/her own goals.

In the same Letters column, I take issue with Casius Pealer's understanding of an intern's standing in society. He should bear in mind that graduates who pursue a license to practice architecture are considered both interns and associates. If you are proactive in the IDP, become a member of the AIA's Young Architects Committee, and are visible in your community, there is no reason you should be a "second-class citizen." If your career goal is to make an impact on the built environment, there is no better training than that of an architect.

—Kriss Pettersen, AIA
Cambridge, Mass.

Research on Archigram

For research being conducted on Archigram, the writer would appreciate information, anecdotes, or recollections relating to the British group, which published a newsletter in the 1960s and early 1970s. Please write Simon Sadler at 21 Trinity Green, Mile End Road, London E1 4TS, Great Britain, or E-mail s.j.sadler@open.ac.uk.

Corrections

In a news story in the January issue, the architect of the Museum of African American History should have been identified as Sims-Varner Architects & Associates, whose president is Harold R. Varner, FAIA.

Contrary to what was stated in "America's Best-Managed Firms: How to Succeed with Expanded Services" (January), SmithGroup does not have a separate company for building-engineering services; engineering services are integral to the architectural practice.

In RECORD'S January coverage of Commerzbank, legend number 14 on the isometric drawing (page 77) should have identified the air-intake extrusion rather than the air-exhaust extrusion below it. Legend number 21 on the same drawing should have been deleted. ■

RECORD may edit letters for grammar, style, and space availability, taking care not to change the author's meaning. Letters sent by post or electronic mail must include the sender's full name and address.



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CIRCLE 9 ON INQUIRY CARD

SPEAK OUT Of race, monuments, and memorials: it's time for a national slavery museum.

RICHARD SMITH II



Richard Smith II, an associate member of the American Institute of Architects, is currently a staff architect with Steven J. Karr, AIA, Inc., in Wheaton, Maryland. He is a graduate of the University of Maryland School of Architecture.

This past summer President Clinton commissioned an initiative on race relations with a mandate to hold panel discussions and dialogues across the country and to work toward finding solutions for ongoing racial problems. In the spirit of contributing to such a dialogue, I would like to propose that the time has come for a national memorial or museum dedicated to slavery to be conceived and constructed in our nation's capital.

As we approach the dawn of the 21st century, the impact of black slavery in the United States still lingers. Black slavery lasted in this country for approximately 250 years, from the early 17th century to 1865, during which time 9 out of 10 blacks living in the United States were slaves.

Legalized segregation and discrimination lasted for another 100 years—and some would argue even longer. In 1900 most adult black Americans in the United States had been born into slavery. That would mean that the great-grandfather of a 30-year-old black man today was probably a slave. Slavery was not so long ago.

The impact of slavery on 20th-century Americans as a whole and black Americans in particular has been both obvious (Jim Crow laws in the South and housing discrimination laws in the North) and not so obvious (poverty, poor education conditions, joblessness). Up to the present day, observers have blamed the woes of black Americans on economic circumstances, forgetting our country's sordid past.

For 250 years blacks were literally the chief commerce of the South, helping to give wealth to the North, East, and West. Even after slaves had been freed, blacks were allowed to fight in the two World Wars only by executive orders from the president; meanwhile, on the homefront, blacks were suffering every day from de jure discrimination. Black citizens were required to take the back seats on trains and buses; even German prisoners of war in this country were allowed better accommodations on these same vehicles. Black Americans today still feel the sting of the indignities that were suffered by their grandparents.

In the past, the United States has dealt with racial injustice legislatively through Congressional resolutions, bills, and executive orders of the president, yet the possible positive effects of these measures have often been challenged through curtailment or defeat.

Those in power seem not to have considered one of the world's most powerful social solutions: architecture. One need only look to the Vietnam Veterans Memorial, the United States Holocaust Memorial Museum, and the proposed National Museum of the Native American to see architecture that addresses social issues of right and wrong, good and evil, or redemption and reconciliation.

As these examples attest, architecture that is well designed and implemented becomes not only a visual means for societal introspection but also an elixir for soothing social discord and a mediator of social injustice. A national memorial or museum dedicated to the issue of black slavery in the United States is at least 130 years overdue.

Failure by the architectural community at large to support and promote the idea of such a memorial in the United States will continue to leave the crimes of the past devoid of acknowledgment and the victims and their ancestors without closure. If we can recognize the perpetration of genocide against people outside our country through national memorials or museums, shouldn't we be even more concerned with recognizing what took place here for more than 200 years?

A proposal for a national slavery memorial may be a political hot potato, but the necessity of such a structure has never been more evident, its absence more egregious. Regardless of the controversy surrounding such a project, this country must make it a reality in order to reconcile the past and move at least partially cleansed into the 21st century. Black slavery in the United States is an issue we must never forget. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*



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CIRCLE 10 ON INQUIRY CARD

STAFF

MENTORS What firefighting has taught one architect about how all design professionals should address fire safety.

Scott G. Nacheman, an associate member of the American Institute of Architects, is an architectural designer and engineer with LZA Technology, a multidisciplinary firm specializing in building investigations and failure analysis based in New York City. He is also a firefighter with Guardian Engine Company No. 2 of the Jericho (New York) Fire Department.



Colleagues often ask me what being a firefighter has taught me about architectural design. While at first these two professions appear to be completely unrelated, firefighting has important lessons for architects. How should architects approach designing for fire safety? What attitudes should they bring to the task?

As a firefighter I have had the unfortunate but educational opportunity to observe the effects of fire on buildings and on occupants of these spaces. I have witnessed the devastation of people's property, livelihoods, and irreplaceable memories. I have learned that fire destroys everything. It takes lives—not only the lives of the users of a space but of the firefighters whose job it is to enter burning buildings. In the United States alone, more than 2,000 people die every year as a result of fire and smoke.

While the architect can do only so much to prevent fires, the effects of fire and smoke often can be mitigated by better design and material selection. If we recognize the importance of such details, we will be better prepared to correct the problems, thereby reinforcing the commitments we made when we entered the profession.

One element of responsible design should be universal: our buildings should provide safety. The seemingly endless hours of programming, design, and refinement are ineffectual if people are not safe in the built environment. Safety comes in many forms: safety from the elements, safety from intruders, and, among the most important, safety from fire and smoke.

While building codes specify certain criteria that must be adhered to, these directions should not be thought of as final solutions to fire safety. Good judgment and careful analysis are equally important to a design that will provide adequate fire and life safety to a building's users.

Although clients often do not want to devote project funds to things they don't see, they should understand the importance of the "invisible dollars" that are spent on fire and life safety. Such worthwhile expenditures include additional sprinklers, not only in locations that are required by the code but in every space of every building, occupied or not. Even more important is fire suppression in void spaces such as ceilings, plenums, large wall cavities, and raised floor systems.

A premium is usually paid for materials with higher fire ratings; however, a wall or door that resists flame can limit fire and smoke extension and provide the occupants of a space with the valuable time needed to evacuate a building.

The flame-spread and smoke-development ratings of materials should be considered seriously when selecting equipment, finishes, and furnishings for a space. After all, smoke caused by the combustion of these products is the largest cause of fire-related deaths.

Lightweight construction materials should also be taken into account when designing. Modern engineering has provided us with some extremely economical and versatile structural members, yet they are also among the most deadly. Perhaps the biggest culprits are "gang nail" or "gusset plate" trusses and joists. Early fire-induced failure of these lightweight members has been the cause of an increasing number of firefighter deaths in recent years. If these materials must be used, a considerably higher level of fire protection and suppression should also be provided.

No listing of examples of appropriate designs for fire safety could possibly be complete. A much more effective means of enhancing the well-being of the public is to create an improved awareness of the importance of fire safety.

We cannot put a price on human lives. Although an entire project budget cannot be devoted to fire and life safety, we should provide sufficient protection for the users and rescuers in our buildings. I urge the design profession as a whole to be continuously aware of the importance of fire safety. Designing spaces with safety in mind will undoubtedly allow us to fulfill our professional and moral obligations, and, ultimately, to save lives. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*


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CIRCLE 11 ON INQUIRY CARD

PULSE RECORD readers were asked: Should state governments require continuing education for licensure of practicing architects?

YES: 70% NO: 30%

Yes: I am a regulator for the Maryland State Board of Architects, and in that capacity I have seen that keeping licensed practitioners current with the latest information in the field is in the public's best interest. Continuing education also has a tremendously positive impact on a practice—my partners, my staff, and I have all gained from it.
—Al Rubeling, Jr., FAIA
Rubeling & Associates
Architecture + Interior Design
Towson, Md.

Yes: Since life-safety requirements and building-material technology advance on a regular basis, state continuing education requirements should be mandated for all practicing architects. AIA members and nonmembers profit from having to meet continuing education standards similar or equivalent to those currently required by the AIA. My local chapter certainly offers an excellent program, which benefits its current members and attracts new ones.
—Michael S. Andersen, AIA
Tate and Snyder Architects
Henderson, Nev.

Yes: In all professions there are new technologies, products, and processes. An architect, like anyone else who wants to be at the top of his or her game, has to keep up, and continuing education is the logical way to do it.
—Leah R. Karpen
Asheville, N.C.

Yes: Either we are "professionals" committed to education or we might as well become builders.
—Kaya K. Doyle, AIA
Lake Zurich, Ill.

No: As practicing architects in the Information Age, we all know that in order to provide the best service possible to society we must constantly evolve both as humans and as businesspeople. It's survival of the fittest out there. If we aren't continually learning and applying our new knowledge to our practices, we fall short, our clients realize it, and we lose new commissions. To *require* architects to spend their precious time tabulating learning units and completing self-report forms is a patronizing way for our professional associations and licensing boards to keep an eye on us. One cannot hide ignorance for very long; if we don't make keeping up our own responsibility, we shouldn't be practicing in the first place.
—Mary Ellen Lynch Comisso
Toronto, Ont.

No: There is no cry from the public for this. Why impose more regulations on ourselves?
—Robert Clough, FAIA
Loebl Schlossman & Hackl/
Hague Richards
Chicago

No: I have been a licensed architect, building contractor, and real estate broker for more than 25 years, and have been burdened with continuing education requirements to maintain my broker's license in California. Calling the requirements educational is a joke. All they have done is increase my cost of doing business and take up valuable time. Mandatory continuing education for architects is pointless: professionals research and study without the state having to tell them to.
—Harry L. Martin, Architect
San Diego, Calif.

This Month's Question

Does the increasing concentration of architectural services within large firms benefit architects and their clients?

Although architecture remains primarily a profession of small firms, recent surveys confirm that larger firms are consolidating their influence. According to Kermit Baker, Ph.D., large firms account for a "disproportionate amount of growth" in the industry. More than 30 percent of all employees in the profession work at firms with 50 or more persons. The 50 largest firms, according to government statistics, account for 18 percent of total employment.

Does the increasing concentration of architectural services within large firms benefit architects and their clients? ☐ Yes ☐ No

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CIRCLE 13 ON INQUIRY CARD

BOOKS The ground rules for getting a monograph published—whether you're a star or not—and a look at a few recent examples.

BY MILDRED F. SCHMERTZ, FAIA

Mildred F. Schmertz, FAIA, writes about architecture for several magazines, including Architectural Digest *and* ARCHITECTURAL RECORD. *She has contributed essays to several architectural monographs, such as* Hardy Holzman Pfeiffer Associates, Zimmer Gunsul Frasca, *and* Mitchell/Giurgola Architects.

Alexander Gorlin: Buildings and Projects, *introduction by Paul Goldberger; essays by Vincent Scully and Alexander Gorlin. New York: Rizzoli, 1997, 160 pages, $35 (paper).*

Ricardo Legoretta Architects, *edited by John V. Mutlow. New York: Rizzoli, 1997, 240 pages, $65.*

Centerbrook, Volume 2, *by Andrea Oppenheimer Dean; essays by Vincent Scully and Nicholas Negroponte. Gloucester, Mass.: Rockport, 1997, 208 pages, $40.*

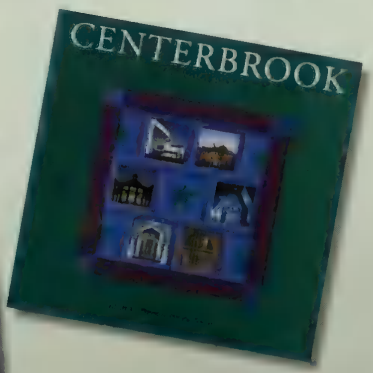
Fumihiko Maki: Buildings and Projects, *edited by Maki and Associates. New York: Princeton Architectural Press, 1997, 288 pages, $60 (cloth), $40 (paper).*

Today, architecture is a more popular subject for the general reader than it used to be. The audience for books on architecture is catching up with that for art books, and many more architecture publications are found in bookstores.

In the past the readers of architectural monographs were mostly architects, students, historians, and a few devotees. Now, as Rizzoli architecture editor David Morton points out, "If the subject of the book is a superstar—like Richard Meier or Frank Gehry—the book will attract a wide readership, go into a second and third printing, and earn profits for the publisher as well as royalties for the architect."

Even newly published monographs of the work of out-of-fashion Postmodernists can become bestsellers today. Rizzoli's latest Michael Graves monograph, for example, a book of great graphic beauty even if its contents are sadly *démodé*, is in its second printing. "The work of cool young kids, the brightest members of the forthcoming architectural generation, can also be good material," Morton reports.





While monographs are becoming increasingly more expensive to publish and costly to buy, an architectural firm that proposes a book that is expected to sell well is not required to directly subsidize publication by agreeing to purchase a given number of books. The firm must, however, provide free of charge to the publisher all texts, photographs, and drawings, as well as a bibliography, project list, index, and whatever other documentary material is required.

As a rule, the firm does not have to pay the cost of designing the book, unless it wishes to hire its own graphic consultant. Nor does it have to pay for the book's introduction, for which the publisher usually pays a small honorarium. All production and distribution costs are sustained by the publisher.

Creating a monograph is more difficult for a practice not headed by a superstar or a leading trendsetter. In addition to the aforementioned expenses, such firms must agree to reduce the publisher's risk by purchasing a significant number of discounted copies of the monograph—usually about 2,000.

Unfortunately, several publishers report that because the monograph market is currently flooded, they plan to bring out fewer next year. Among this year's crop are some fine examples. Those reviewed here represent four different approaches. All well serve their purpose of documenting and displaying a firm's best work.

(continued on next page)

Where theory drives design

Paul Goldberger, former architecture critic and chief cultural correspondent of the *New York Times* who now writes for the *New Yorker,* has contributed a masterly introduction to *Alexander Gorlin: Buildings and Projects.* Both critic and architect appear to live in the intellectual stratosphere of the architectural world—where history and theory drive design.

Goldberger is able to bring strong insights to the story of Gorlin's creative life—where he has been, what he is doing now, and where he is going. The architect, he notes, began to practice during the temporary demise of Modernism, free from its canonic imperatives and able to invent buildings within what Goldberger calls "the Postmodern value system."

The critic traces Gorlin's beginnings as a Classicist, and argues that his current shift to Neomodernist and Deconstructivist design does not signify that he has replaced one gospel with another. "[Gorlin] sees both classicism and modernism as different means of exploring certain fundamental architectural truths, and it is the struggle to explore these truths, not their superficial stylistic garb, that motivates him."

In one essay Gorlin argues, "The most legitimate direction leads to the creation of an architecture that is neither ancient nor modern, one that evolves from a ground of archetypal elements common to all architecture…with an immediacy and direct, intimate reality."

A poetic architecture

Ricardo Legoretta Architects has little historical or theoretical content. But it is a handsome book that presents 25 of the architect's finished works, their brightly painted, exaggerated geometries splendidly photographed by Legoretta's daughter Lourdes. The projects are well documented with drawings, along with texts covering each building's purpose, site, and materials.

The introduction, by architect John Mutlow, who also teaches at the University of Southern California, discusses Legoretta's uses of the wall plane, light, scale, geometry, and color, and includes much that is instructive about the emotive and poetic qualities of the architecture. In an interview conducted by Mutlow, Legoretta is articulate, offering insights into his background and feelings.

Unfortunately, the architect's preface and personal commentary reveal that, guided by platitudes, he lives in an idyllic, squalor-free Mexico of his own invention. He writes, "Mexican villages with their vernacular architecture are an example of the correct Mexican lifestyle, successfully mixing ethnic, cultural, and economic differences in a human and harmonious environment. They have been and will remain endless sources of inspiration and happiness."

Reading this, anyone who has



ever visited a remote Mexican village will find it hard to believe that Legoretta has ever been in one.

Forgoing the theoretical

Centerbrook, Volume 2 is essentially the work of one good writer, Andrea Oppenheimer Dean, who has furnished the introduction and all the descriptive and interpretive texts for a total of 40 built projects. Her book maintains a unity of tone and expression that monographs with essays and project descriptions by several writers often lack.

(continued on page 30)

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It is without critical theory, doubtless because, as Dean points out, the firm's six partners—Mark Simon, Jefferson B. Riley, Chad Floyd, William H. Grover, Robert L. Harper, and James C. Childress—"are convinced that profound or brilliant design begins not with moralistic ideologies, abstract theories, or trend-driven stylistic formulas. Transcendent architecture, they believe, starts with fulfilling elemental human needs [to make] an uplifting place out of the particular situation and budget available."

Only two very brief essays have been added to Dean's text. In his foreword, Vincent Scully discusses the way Centerbrook's founders continue to honor late partner Charles Moore, citing their "delightful furniture, often wonderfully zany, happily conceived residences of all kinds and, increasingly, highly sympathetic institutional buildings."

The afterword by M.I.T. Media Laboratory director Nicholas Negroponte celebrates Centerbrook's felicitous expansion of the lab, describing the ways that carefully designed space, color, plants, and even toys contribute to what he calls "nerd pride."

A quintessential Modernist

Fumihiko Maki: Buildings and Projects is an extraordinary monograph, surely one of the best ever published, with a beautiful piece of graphic design by Sara Stemen, splendid printing, and black-and-white photographs that are as handsome as those in color. It consists of 25 projects, built and unbuilt, chosen by 1993 Pritzker Architecture Prize winner Maki from over 100 that constitute almost three decades of work.

It is the only book available on his architecture. The images of Maki's technologically inventive, transparent, light, quintessentially Modernist design flow in white space—not a single spread is crowded—yet each project is allocated all the photographs, drawings, and text it needs to be well understood.

The thorough, very carefully written texts describe and interpret the architecture in all its design and structural aspects, and they fully discuss the influences that shaped it. Like Gorlin, Maki inhabits the intellectual life of architecture. His book contains several historical, critical, and theoretical essays, by himself and others, and is required reading for anyone who hopes to understand this great architect and his work.

Briefly Noted

1100 Architect, *introduction by Pilar Viladas and essay by Pat Morton. New York: Monacelli, 1997, 192 pages, $35 (paper).*
David Piscuskas and Juergen Riehm of 1100 Architect have been practicing a rigorous but sensual brand of Modernism since 1983. Well known in the art and fashion worlds for their residences, galleries, and stores, Piscuskas and Riehm show 24 projects in this handsome book, which they designed themselves.

Koetter Kim & Associates: Place/Time, *introduction by Alan J. Plattus; essays by Colin Rowe and Fred Koetter. New York: Rizzoli, 1998, 224 pages, $60, $40 (paper).*
From Boston to Ho Chi Minh City, from academic buildings to new city centers, Fred Koetter and Susie Kim have developed an impressive body of work that bridges the gulf between Modernism and the New Urbanism. Thirty-two projects are included in the book. ■

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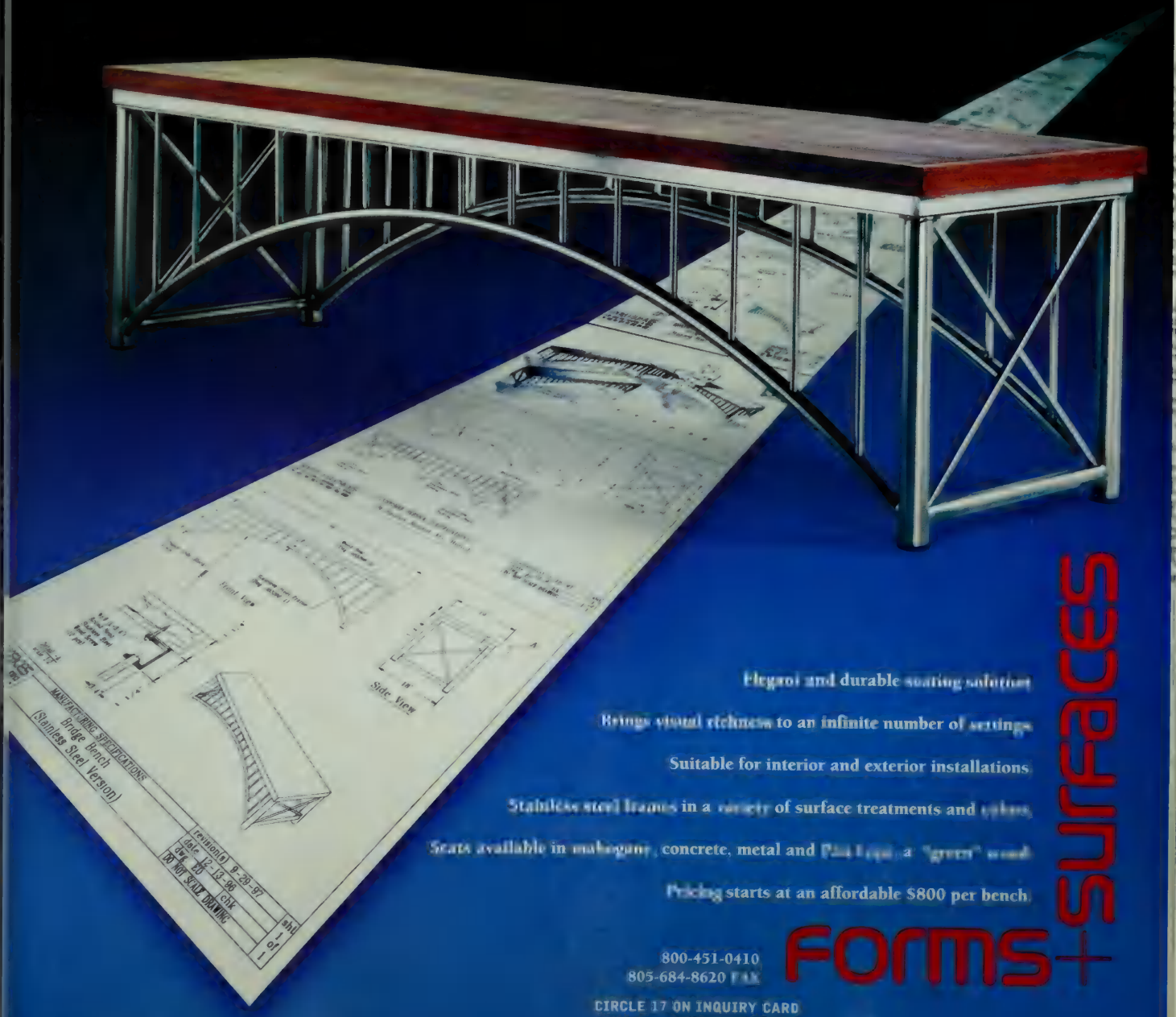
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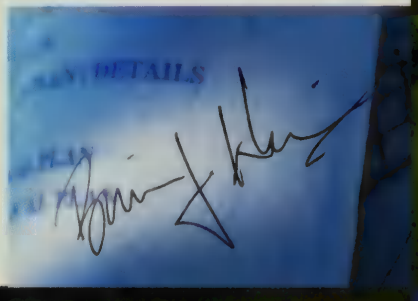
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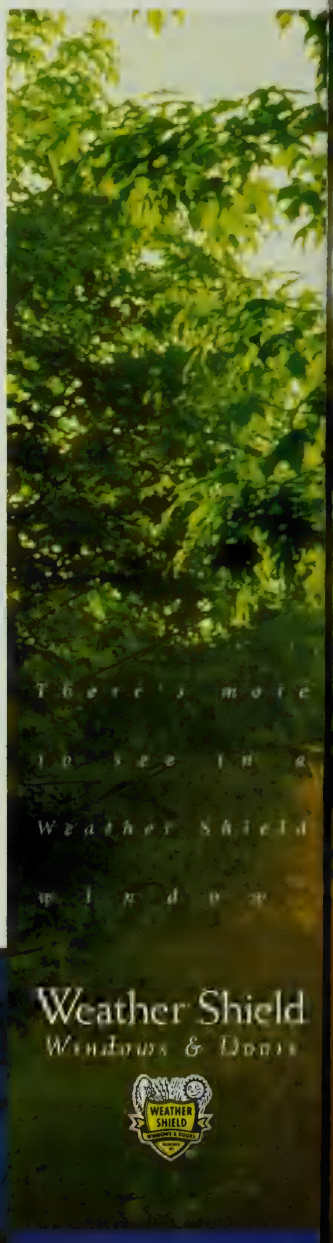
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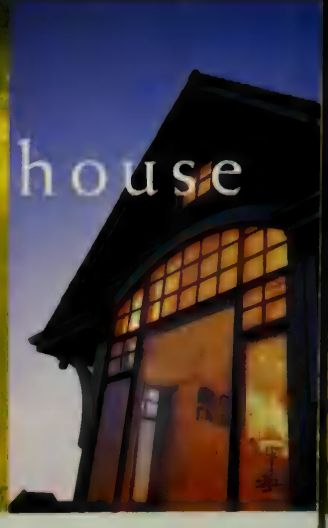




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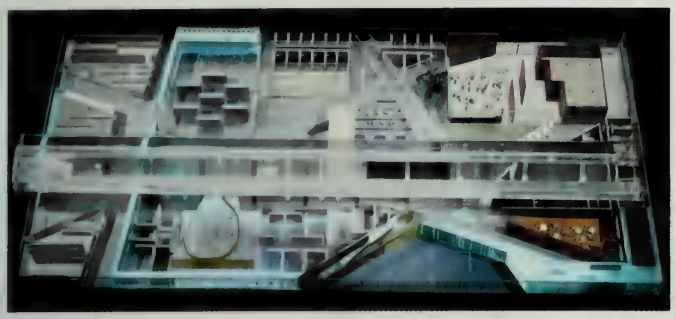
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CIRCLE 20 ON INQUIRY CARD



KOOLHAAS TO APPLY HYBRID THEORIES TO HISTORIC IIT CAMPUS

Rem Koolhaas has been named the winner of an international competition for a campus center at the Illinois Institute of Technology (IIT), a much-coveted commission because of the Chicago university's historic link with Ludwig Mies van der Rohe. The center, which will be the first new building at IIT in 25 years, gives Koolhaas a chance to realize urban theories from his cinderblock-size 1995 book *S,M,L,XL*. The other finalists were Peter Eisenman, FAIA; Helmut Jahn, FAIA, and structural engineer Wener Sobek; Zaha Hadid; and Kazuyo Sejima and Ryue Nishizawa.

For a site one block north of Mies's Crown Hall, Koolhaas proposes an innovative one-story, 100,000-square-foot building running beneath Chicago's elevated railroad tracks. A stainless-steel tube on the structure's roof will encircle the tracks and block out noise. The glass-walled, rectangular exterior appears orthodox, but the interior is decidedly unconventional.

Slicing through it are diagonal passageways based on Koolhaas's observation of how people now cross the empty site. In between are hives of activity, like 24-hour shops, a bookstore, and a café, to encourage random encounters. Literally building on Mies's legacy, Koolhaas even suggests including the master Modernist's Commons Building under the roof of his campus center.

Koolhaas's idea is to provide a vibrant connection between the academic buildings to the west and the residential buildings to the east, reurbanizing an urban void on Chicago's South Side. The building emanates from a theory Koolhaas expressed in *S,M,L,XL*: "If there is to be a 'new urbanism,' it will not be based on the twin fantasies of order and omnipotence; it will be the staging of uncertainty…[and] about discovering unnameable hybrids."

Members of the four-member jury—chaired by Mack Scogin, AIA; James Ingo Freed, FAIA; Phyllis Lambert, director of the Canadian Centre for Architecture; and Michael Hays, professor of architectural theory at Harvard University—cited Koolhaas's "hybrid" vision in choosing his design. IIT officials said they expect construction of the $25 million project to begin next year and be completed in the spring of 2000. *Blair Kamin*

The winning scheme by Rem Koolhaas (above) and a detail of Peter Eisenman's scheme (below).



AUTODESK COMPETITORS COOPERATE TO MAKE DESIGN SOFTWARE CHEAPER

Major AutoCAD competitors have formed an alliance that they hope will undercut AutoCAD's dominance of the design-software market. The OpenDWG Alliance, as it is called, now allows free downloads of computer code that, in the hands of programmers, can create DWG translators and thus make AutoCAD files compatible with other design software programs.

AutoDesk has never released full technical details of DWG, the file format for AutoCAD, choosing to provide technical support for DXF and IGES file formats only.

The Alliance software comes from MarComp, which has been selling it to CAD vendors since 1990. Implementation quality varies, but it may improve now that Alliance members such as Intergraph, DataCAD, and Nemetschek have pledged to share information.

MarComp was just purchased by Alliance ringleader Visio, which is on the verge of marketing a cheap AutoCAD "clone" that uses DWG as its native format (that is, no translation is necessary to exchange files with AutoCAD). Neither the clone nor MarComp's utilities can completely handle ARX, the latest wrinkle in AutoCAD technology.

The code and manuals can be downloaded from the Web at www.opendwg.org. Commercial use requires OpenDWG membership ($25,000 for the first year for commercial developers, $5,000 for firms that use the software internally). *Steven S. Ross*

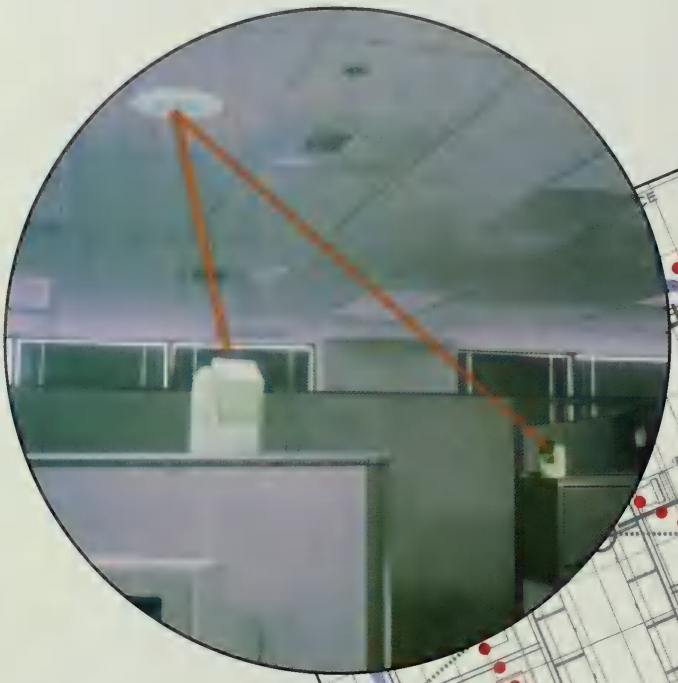


OPEN-HOUSE APPROACH TO URBAN RENEWAL IN PARIS On the eve of revitalizing the Grands Boulevards, the Right Bank avenues stretching from the Place de la République to the Place de la Madeleine, Paris city planners are breaking with tradition. Instead of unveiling an urban plan and then holding public hearings, the city is consulting the public *before* heading to the drafting table.

For the next two years, a city architect will be on hand at the newly opened Maison des Grands Boulevards on the Boulevard des Italiens to answer questions and listen to public concerns. Visitors may also write their thoughts in notebooks, which urbanists, businesspeople, and city officials will review. The city's objective is to boost the economic and cultural life of the neighborhood by improving lighting, signage, and urban furniture. Safeguarding architecture—from the area's covered passages to its banking palaces to the Art Deco Rex Theater—is also on the agenda.

For the moment, public opinion is running against the scrubbed-clean urbanism of the Champs Elysées renovation, favoring the less predictable mix of residential buildings and entertainment facilities that has long defined these grand boulevards. *Claire Downey*

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IN EXPANSION, FREED GIVES THE ISRAEL MUSEUM A LITTLE LOUVRE

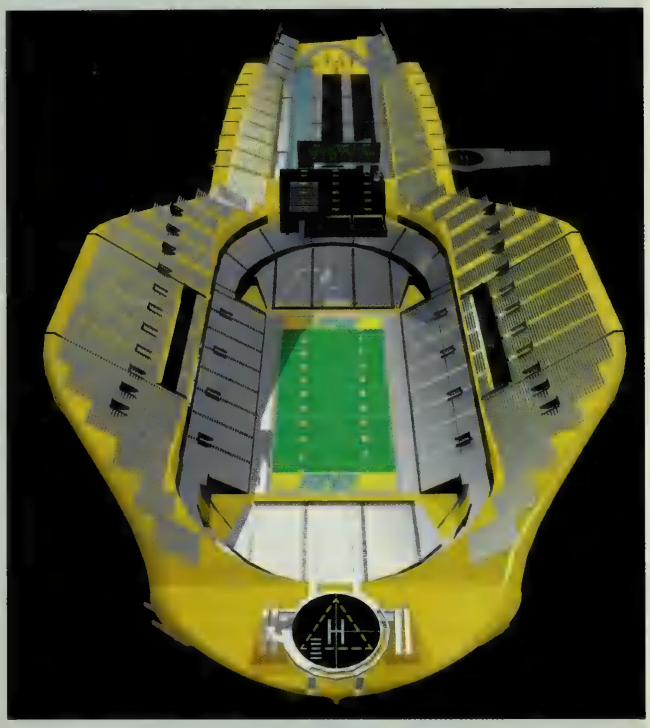
The Israel Museum in Jerusalem last year commissioned James Ingo Freed, FAIA, to do for the institution what his partner I. M. Pei, FAIA, did for the Louvre: unify disparate components of a large complex into a comprehensible whole. Since its founding in 1965, the museum has grown rapidly into a sprawling campus with a half dozen buildings and several gardens straddling a hill. "We've lost the center by expanding over the years," says museum director James Snyder. "It's hard to know where to get in."

In his plan, Freed places a small pavilion at the street entrance and a large, 130,000-square-foot pavilion at the center of the campus, joining the two with a plaza. This welcoming center will house orientation rooms, food stalls, a gift store, restrooms, a 600-seat auditorium, and an underground parking garage. Covered passageways link the pavilion to other museum buildings. The project will cost about $50 million and is expected to be completed within four years.

Freed will build in the luminous white Nazareth marble of the existing museum buildings rather than use the normally mandated golden Jerusalem stone. The roof of the welcoming center, visible from anywhere on campus, is a dome cut into four quarters, with each quarter rotated outward, "a joining of Modernism with the existing Middle Eastern architecture," according to Freed.

The pavilion will make the museum a prominent feature of the Jerusalem hillscape, forming an axis with the Knesset and the Supreme Court. "This is a city of hills," says Snyder. "Every hill has to have something." *David Simon Morton*





A FANTASY STADIUM FOR A DREAM TEAM **The Los Angeles–based Academy of Architecture, Arts and Sciences asked architects to design a stadium that would lure a new football team to the city, remedying L.A.'s abandonment by two football teams in the last two years. The competition was conceived as a fantasy—the stadium was to be sited on Santa Monica beach—but the winning entry was perhaps the most sensible of the submissions.**

Heneghan Peng Architects of New York proposed a seaworthy stadium capable of docking in any city a football team chooses to call home. A stadium ship has obvious entertainment value, making it attractive to a prospective football team owner. If and when an owner moves a team out of town, a city can recoup its investment by selling the stadium to the team's new home city. The stadium's hull is traced from that of the largest supertanker in the world, so it should float. ***D.S.M.***

ARCHITECTS ARE WELL PLACED TO KEEP SEATTLE'S BUILDING BOOM IN CHECK

The value of projects issued building permits in Seattle reached a dizzying high of $1 billion in 1997. In addition to abundant commissions for the design community, this boom has brought prominent political positions. One of four architects and planners who recently won city and county council seats around Puget Sound is Peter Steinbrueck, AIA, the first architect on Seattle's city council. "My constituents see me as a watchdog during this period of major new construction," he says.

Seattle's new mayor, Paul Schell, Hon. AIA, is considered an ally by many architects because of his experience as director of the Department of Community Development, dean of the University of Washington's College of Architecture and Urban Design, and developer of prominent urban projects.

Managing the region's unprecedented growth—the population of metropolitan Seattle has increased by 376,000 since 1980—was a decisive factor in the November mayoral race. While Schell promoted increased density, his opponent believed development should take place beyond city limits. At a town meeting sponsored by Space.City, a local design forum, the mayor enlisted the help of architects in finding creative ways to build new housing without destroying the single-family character of existing neighborhoods. One suggestion was an annual small-houses-for-small-lots design competition with winning plans available for free to builders.

And Schell is not afraid to revisit decisions made by the last administration, including plans to move municipal functions into a downtown tower. "A high-rise office building is not an appropriate image for City Hall," he says.

Also hotly debated was a proposal to build a scaled-down central library incorporating apartments, a hotel, and retail space. "The mixed-use component would provide an opportunity to knit the library into the city fabric," says Schell. Given Seattle's tradition of economical, uninspired civic buildings, Steinbrueck voiced concern: "The library doesn't have to be monumental, but it should be an expression of civic pride." *Sheri Olson, AIA*

JORDANIAN ARCHITECT RASEM BADRAN GETS COMMISSION FOR QATAR MUSEUM

When the Al-Thani family, hereditary rulers of Qatar, needed a new home for their vast collection of historical artifacts, they asked the Aga Khan Trust for Culture to organize a competition. An international jury of prominent architects unanimously recommended Charles Correa's scheme as the standout among the entries, which also included projects by James Wines, Oriol Bohigas, Richard Rogers, and Zaha Hadid.

Shiekh Hamad bin Khalifa Al-Than, Qatar's emir, however, opted for a design by Jordanian architect Rasem Badran, citing its reflection of the city's history and its clear expression of Muslim heritage. Correa's entry met the competition's budget and space stipulations, but Badran's was half again as sizable in both cost and square footage.

The Museum of Islamic Arts, as it is to be called, will sit on a sloping triangle of 27 acres in Doha, Qatar. Designed in a vernacular Persian Gulf style, the $52 million, 402,000-square-foot structure incorporates not only past forms but also past patterns and typologies. In his design Badran has taken advantage of programmatic distinctions to separate the various galleries into discrete units arranged in a village-like grouping. He clusters the galleries along an internal street that curves along a reconfigured shoreline.

Inauguration of phase one of the museum is planned for 2000; the full construction schedule has not been finalized. *James Steele*





A BLIGHTED STREET'S REVITALIZATION BEGINS IN MACON, GEORGIA

Oakland landscape architect Walter Hood has won the competition to redesign Poplar Street in Macon, Georgia. Once the hub of the city's vibrant cotton and produce markets, Poplar Street is now a blighted strip of vacant lots and boarded-up storefronts interspersed with stunning historic buildings. The design competition, funded by HUD and organized by the Mayor's Institute on City Design at Harvard University's Graduate School of Design, was conceived as a critical first step toward reversing that decline and bringing businesses and residents back downtown.

Hood's proposal converts three blocks of Poplar Street into a series of "backyards" serving various purposes. One would contain a new produce market, another a pavilion and an outdoor movie screen, the third a shallow creek meandering through groves of trees. Parking, bus stops, and other basic services would be housed within the yards, which are intended to evolve with the life of the street.

"With my work you have to be willing to take risks," says the jubilant Hood. "I am grateful that Macon is willing to take that risk."

"Walter's design breaks new ground," adds jury spokesman Ken Greenberg, an urban planner in Toronto. "It acknowledges the complexity and flux of public space, and recognizes the elusive character of collective history. It offers citizens of Macon an invitation to participate in shaping their own narrative."

Hood will refine his design in a series of community workshops; construction should be completed by mid-1999. The $3 million project is being funded through the county's road-improvement program.

Mayor Jim Marshall praised the competition for reacquainting Macon with its own history. "We have an extraordinary asset here, and everyone has a responsibility to protect that asset," he says. *David Dillon*

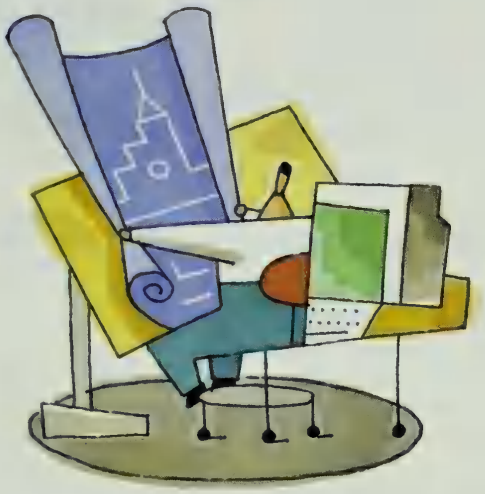
THE NEWEST CANADIAN EXPORT: AFFORDABLE HOUSING **McGill University's School of Architecture in Montreal has designed an affordable housing prototype specifically for the Mexican market. Responding to the need for inexpensive housing in Mexico—which is expected to rise by about 700,000 new units a year until at least 2005—the school's Affordable Homes Program unveiled the Casa a la Carta at the ConstruExpo show in Guadalajara last year. The concrete-panel casa was manufactured in Quebec and constructed on site.**

Reaction from Mexican officials prompted Avi Friedman, director of the program, to create a home-building systems export business with the support of the university, the private sector, and the provincial and federal governments. Promexpo hopes to ship some 100 homes to Guadalajara this year.

La Casa a la Carta is designed with horizontal or vertical expansion in mind, to suit more than one generation of typically close-knit Mexican families. Houses range from 500 to 1,120 square feet, with a living room, a dining area, two bedrooms, a kitchen, and a bathroom. Friedman and his students consulted Guadalajara architect Guadalupe Dipp Reyes to ensure that the design was culturally and financially attuned to the market.

Major elements of the houses and their finishes will be manufactured and shipped from Quebec and then assembled by Mexican labor. The total cost is about $15,000. "The house is aimed at average wage-earners, who will probably be assisted with down payments and monthly mortgage payments by a government agency or a private lender," says Friedman.

Using exclusively Mexican labor and technology, Friedman notes, it would take 12 to 14 months to build an equivalent house. A Casa a La Carta, on the other hand, will take about two weeks to complete once the components arrive in Mexico. ***Albert Warson***



The architect had big plans-but his client's wallet had other ideas.



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CIRCLE 22 ON INQUIRY CARD



NORTH ST. LOUIS TRIES URBAN RENEWAL, SOUTH AFRICAN STYLE

Can the lessons of community-based architecture projects in South Africa be applied successfully to inner-city neighborhoods in the United States? Jo Noero, an architect who was recently appointed director of the graduate program of architecture at Washington University in St. Louis, hopes so. Along with his students, he plans to develop prototypes for the rehabilitation of North St. Louis, a blighted neighborhood in desperate need of intervention.

"The idea in North St. Louis is to develop so-called building hives, where the neighborhood rehabilitation is performed by residents themselves, much the way it is done in South Africa," says Noero, who is South African himself and maintains a practice in Johannesburg. "Residents attend school to learn the trades involved in rehabilitating and upgrading. Building cooperatives are formed to buy materials in bulk. Business classes teach participants to manage the financial aspects of urban renewal."

Once building centers are set up in North St. Louis, banks will be encouraged to locate there so residents can secure mortgages, and courses in subjects like architectural drafting will be offered so local technical skills can flourish. At some stage, Noero says, the building hives will outgrow their usefulness and be turned into community centers or adult education facilities.

"The goal is not gentrification," says Noero. "The idea is to stabilize a marginal neighborhood, to prevent it from becoming a dumping ground for people who are already marginalized."

In the early 1980s Noero's work drew the attention of Archbishop Desmond Tutu, who hired him as architect for the Anglican church in Transvaal. His involvement with church and black community leaders in the townships resulted in the creation of experimental housing units, low-cost community buildings, and career centers.

The North St. Louis project will be linked to the centenary of the 1904 World's Fair, which has prompted the city to begin a number of new municipal works. But unlike other urban renewal projects timed to coincide with events such as the Olympics, the residents affected by the transformation will have a say in what goes on. "One of the prime preconditions is the engagement of locals in decision making from day one," Noero says.

Residents of North St. Louis, an area with 60 to 70 percent unemployment, will also benefit from the creation of construction jobs. *Julie Moline*

DOWNTOWN DENVER GETS AN UPSCALE HOUSE—A LIVE-IN MUSEUM OF SORTS

Denver's lively Lower Downtown National Historic District—known as LoDo—is one of the nation's great historic preservation success stories. Home to a number of late-19th-century commercial buildings, LoDo has been transformed from a skid row into an upscale residential neighborhood, with lofts, restaurants, and art galleries. Richard Moe, president of the National Trust for Historic Preservation, called the district "the single best example of a downtown bringing itself back."

Now, thanks to local oilman Frederick Mayer and his wife, Jan, LoDo is getting its first single-family residence, the Red House. Designed by the Seattle firm Olson Sundberg Architects, the multimillion-dollar house sits comfortably between a seafood restaurant and, at least for now, a parking lot. Tired of commuting from their suburban home, the Mayers—longtime art collectors and patrons of the Denver Art Museum—wanted to be able to walk to their downtown office. "And we wanted a place with a lot of wall space and high ceilings—big enough for major pictures," says Frederick Mayer, whose varied collection includes pre-Columbian artifacts, Mexican decorative arts, 20th-century lithographs, and Ming Dynasty furniture.

After interviewing a number of architects, the Mayers turned to Olson Sundberg, largely because of the firm's experience in designing homes for art collectors. The result is a three-story, red-sandstone-clad box that blends nicely with LoDo's mostly red-brick warehouses. "I wanted it to be a good neighbor to the surrounding buildings," says Jim Olson, FAIA, the firm's principal, "but still be a contemporary piece of architecture." Olson had no trouble getting his plans approved by LoDo's tough design review board.

The U-shaped house, scheduled to be completed by late spring, includes a courtyard, a first-floor living room and dining area that will be used to display artworks, a second-floor master bedroom plus two small guest rooms, and, on the third floor, a small, windowless gallery.

Mayer says he's especially looking forward to entertaining guests on the Red House's rooftop sculpture garden, "where people can sit and have a drink and look up at the stars." *David Hill*



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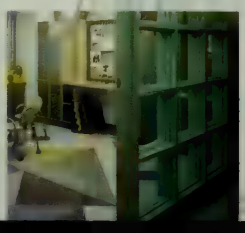


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CIRCLE 23 ON INQUIRY CARD



COMMERCIAL DEVELOPMENT PROVIDES CENTER FOR SPRAWLING TORONTO SUBURB

The 130,000 citizens of Vaughan, Ontario, have never had a place to call downtown; they don't even have a main street. This classic case of urban sprawl just northwest of Toronto is the result of 20 years of fitful expansion: a bland, free-form assortment of villages, strip malls, light industrial buildings, and business parks. But work has begun on a downtown core with some 3 million square feet of commercial development, which, city planners predict, will get this suburb centered.

Vaughan's official plan for its "corporate centre code" includes two superstores within five miles of each other near three major highway intersections. And the recent Canadian mania for urban entertainment centers has not escaped the city's planners. Here are a few of the developments approved or awaiting final approval, most of which will be completed this year:

• A $175 million, 1.4-million-square-foot "super-regional, destination-oriented megamall" will sit on a 180-acre site across from Paramount Canada's Wonderland theme park. The megamall is a joint venture of Cambridge Shopping Centres, in Toronto, and the Mills Corporation, of Arlington, Virginia; the architects are Bregman+Hamann, of Toronto.

• AMC Theatres of Canada, in Toronto, a subsidiary of AMC Entertainment, of Kansas City, Missouri, will put up a 30-screen, 110,000-square-foot megaplex in the Interchange, a multiuse development designed by Young & Wright Architects of Toronto.

• Directly opposite the AMC megaplex, Famous Players, a Toronto-based subsidiary of Viacom, which is in New York City, will build a $12 million, 100,000-square-foot, 18-screen (including an IMAX) entertainment center it calls the Colossus (above). Page+Steele Architects and Planners, of Toronto, designed its top to resemble a flying saucer 180 feet in diameter.

Vaughan's official plan states that the long-term development of the downtown will be based on the "main street model rather than the shopping center model of an urban center, with a finely textured mix of uses and ownerships which allows for continual change and intensification along the central streets and intersections." *A.W.*

ON THE WEB: EASING TOWARD A SUSTAINABLE ARCHITECTURE EDUCATION

Calling prevailing models of architecture education outmoded, a new Web site is offering up a smorgasbord of ideas aimed at promoting a more collaborative, "sustainable" brand of professional education. The site, which was launched on January 30, is the brainchild of Marvin Rosenman, chair of Ball State University's architecture program and founder of the project, Educating Architects for a Sustainable Environment (EASE), and Joseph Bilello, associate dean of Texas Tech University's College of Architecture. Region 5 of the U.S. Environmental Protection Agency provided the major funding for the project.

The site, at www.ease.bsu.edu, addresses complaints that are familiar to many critics of architecture education: that many schools still regard architecture solely as art; too many teachers adopt a "master-pupil attitude" in studio; and design at most programs overshadows all other curricular areas.

As an antidote, the EASE site lays out some 140 reform ideas, the product of three conferences between 1994 and 1996 that attracted students, educators, and industry leaders. Many are provocative and practical: more multidisciplinary juries; using technology to break through the isolation and clannishness of the studio culture; awarding student prizes for effective teamwork. Others are more doctrinaire, such as "overcome the fear of a tyranny of dogmatic values" or "remodel attitudes toward automobiles, bicycles, and beef."

For schools willing to think beyond piecemeal suggestions, the EASE site includes five model interdisciplinary curricula, each based on principles of more sustainable education and building design. As the authors note, openness to rethinking old practices and adopting more environmentally and community-conscious architecture training is in the air in the profession itself and in some schools, such as the University of Virginia, a pace-setter in sustainable education.

The goal of the EASE site, says Rosenman, "is to get all schools to do something. There is not a single right place to start or a single right approach. Any of these ideas would be a step in the right direction." *Lee D. Mitgang*

AND TO THINK THAT THEY'LL SEE IT ON STATE STREET! The Springfield Library and Museums Association will erect the Dr. Seuss National Memorial in Springfield, Massachusetts, the author's birthplace and boyhood home, late next year. The tribute to the children's book author will consist of six bronze sculptures created by his stepdaughter, Lark Gray Dimond-Cates.

One of these will be a bas-relief of the text of *And to Think that I Saw It on Mulberry Street* (Dr. Seuss's first book), which will sit on State Street, just blocks from the real Mulberry Street.

The other five pieces in the $4 to $6 million project will be placed in the Springfield Quadrangle cultural district, across State Street. Ron Henderson of Stephen Stimson Associates, the landscape architects working with Dimond-Cates, says simple granite walkways and pavement set in grids will contribute to the classical atmosphere of the Quadrangle, which houses the library, several museums, and a cathedral, designed in Italian Renaissance revival and Romanesque styles.



So how do Horton the Elephant and Yertle the Turtle fit in? That's the challenge facing the sculptor and the landscape architects. "I want something that has dignity to it," says Dimond-Cates, who remembers her stepfather, whose real name was Theodor Geisel, as a shy, elegant man. "I want people to always remember Ted and his work."

Among other sculptures will be one of Geisel with the Cat in the Hat looking over his shoulder and a 16-foot tower of Yertle the Turtle figures in a children's garden. With winding paths and fanciful park benches, this will be the only area where the quiet order of the Quadrangle yields to Seuss's whimsy. *Debra Morgenstern Katz*

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CIRCLE 24 ON INQUIRY CARD

WHEELCHAIR RAMP DRIVES RENOVATION OF NEW SCHOOL COURTYARD

The new Vera G. List Courtyard at the New School for Social Research provides a rare haven from the hustle and bustle of New York City.

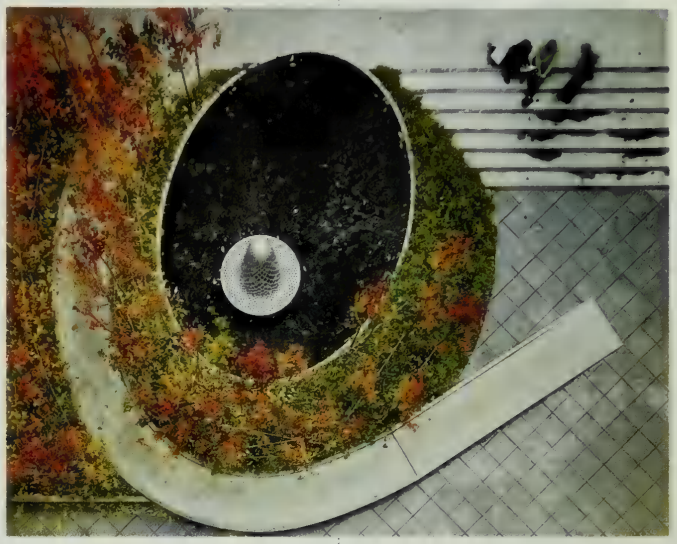
Tucked between two 1950s-era buildings on 11th and 12th Streets, the courtyard was originally a sculpture garden. By 1989 the space had deteriorated, and a second-story skyway—the only wheelchair access between the buildings—loomed oppressively above. The renovation program called for wheelchair access to the courtyard; ample seating for socializing, classes, and outdoor events; new planting; and minimizing the intrusion of the overhead bridge.

The design team of sculptor Martin Puryear and landscape architect Michael Van Valkenburgh embraced the access requirement as a driving force, expanding the program to include the dual-level 12th Street lobby. Mitchell/Giurgola Architects and engineers Ove Arup and Partners were crucial players in the reconfiguration, which cost $2.6 million and took eight years.

The designers replaced the lower-lobby curtain wall with a luminous glazed shed shifted 12 feet into the courtyard, creating a deck that provided sufficient height for stairs to the courtyard level, which double as seating.

A second ramp, with a shallow grade to dispense with obtrusive handrails and a radical curve to accommodate the resulting length, flows down from the deck. Its curvilinearity is reiterated in Puryear's sculptural benches in wood, stone, and steel, and the amphitheater fragment of double-height steps whose arcs embrace the courtyard.

Texture, color, and vegetation expand the space visually. Scored into vast, quiet rectangles of gray stucco, the freestanding 21-foot-high east and west walls recede into the background as their red cedar louvers allow glimpses of sky and neighboring trees. The courtyard's east perimeter is lost in the indeterminate depth of a dense stand of bamboo, while the ramp winds through a thicket of red maples.



Translucent glass wings have transformed the imposing overhead bridge into a soaring canopy that emphasizes and shelters the main circulation axis. A ground-floor cafeteria by Ohlhausen Dubois Architects now faces the courtyard from the 11th Street building, completing its integration with the surrounding interior space. *Andrea Truppin*

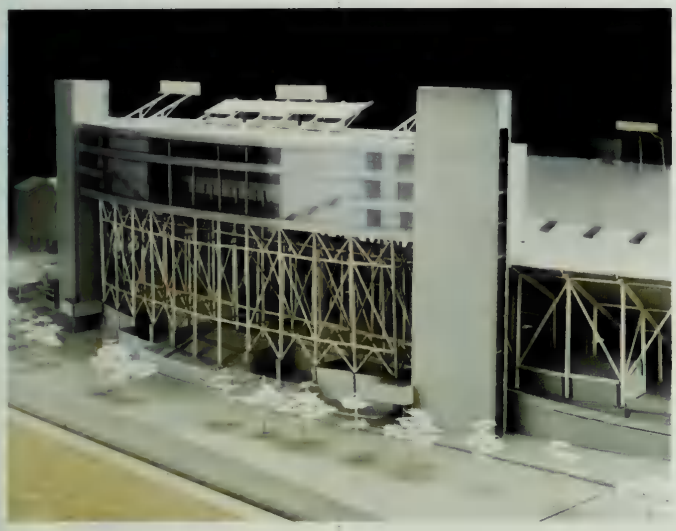
PHOTOGRAPHY © CHUCK CHOI (THIS PAGE); COURTESY OF HOK SPORT (OPPOSITE RIGHT)



NO ARCHITECTURAL ICONS FOR AMERICA'S NEXT OLYMPICS

Winter Olympic Games of the recent past impressed us with iconic works of architecture, such as the Viking ship at Lillehammer (1994) and this year's steel-armored M-Wave speed-skating arena at Nagano. The architecture of the next Winter Games, to be held in Salt Lake City in 2002, is sure to be humbled by its predecessors.

"We're not building much in the way of buildings," says Jerry Anderson, head of facilities for the Salt Lake games. The budget for all new construction is about half the $266 million spent on Nagano's M-Wave arena alone, with most resources devoted to engineering marvels like ski jumps and the bobsled run.



While host cities in other countries benefit from full government support, these games are funded by private interests, with contributions made by local governments and the State of Utah. Salt Lake organizers will make the most of temporary facilities and facilities already in place, such as the Delta Center and the University of Utah's Rice Stadium, which will be expanded by FFKR (shown at left, a new press box), a local firm that has received a number of Olympics-related commissions.

The best designs for new buildings may be those that answer meager budgets with a fierce pragmatism of clean and simple lines. Some arenas designed by FFKR successfully take this approach, and the soon-to-be-named architect of the speed-skating oval at Oquirrh will have to, given available funds.



The recently completed Event Center of West Valley City (above), blessed with $55 million in local funding, repeats the recent successes of arenas elsewhere in the United States. With equal portions of glass and brick, the center—designed by VCBO, a local firm, and HOK Sport—makes no regional or iconic statement of its own.

The real legacy of these games will be the high-tech athletic facilities Jerry Anderson has promised to build: unlike those of former host cities, Salt Lake's will have no trouble staying in operation thanks to an endowment created by the Olympic Committee. *D.S.M.*

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CIRCLE 25 ON INQUIRY CARD

NEWS BRIEFS

Gare du Nord renovation
January saw the start of a three-year, $50 million renovation of Paris's Gare du Nord, Europe's busiest train station, by the French national train system's in-house architects. To handle the 520,000 travelers who pass through the station each day, the station needs a complete restructuring of its maze-like concourse system and ticketing and reception areas. The most dramatic change will be the renovation of the glass-roofed suburban train hall and the building of a new light-filled hall to replace the adjacent concrete parking deck, which has long marred Jacques Hittorff's magnificent 1864 facade.

Downtown vacancy rates low
American downtowns are on the rebound as commercial vacancy rates continue to decline. According to a report published by Cushman & Wakefield, the international real estate services firm, the cost differential between cities and suburbs is narrowing, making it "easier and more cost effective to consolidate intellectual capital downtown rather than suffer attrition by moving." The biggest gainers in the past year were Manhattan, Houston, Chicago, and San Francisco, which now leads the country with its thin 3.3 percent commercial vacancy rate.

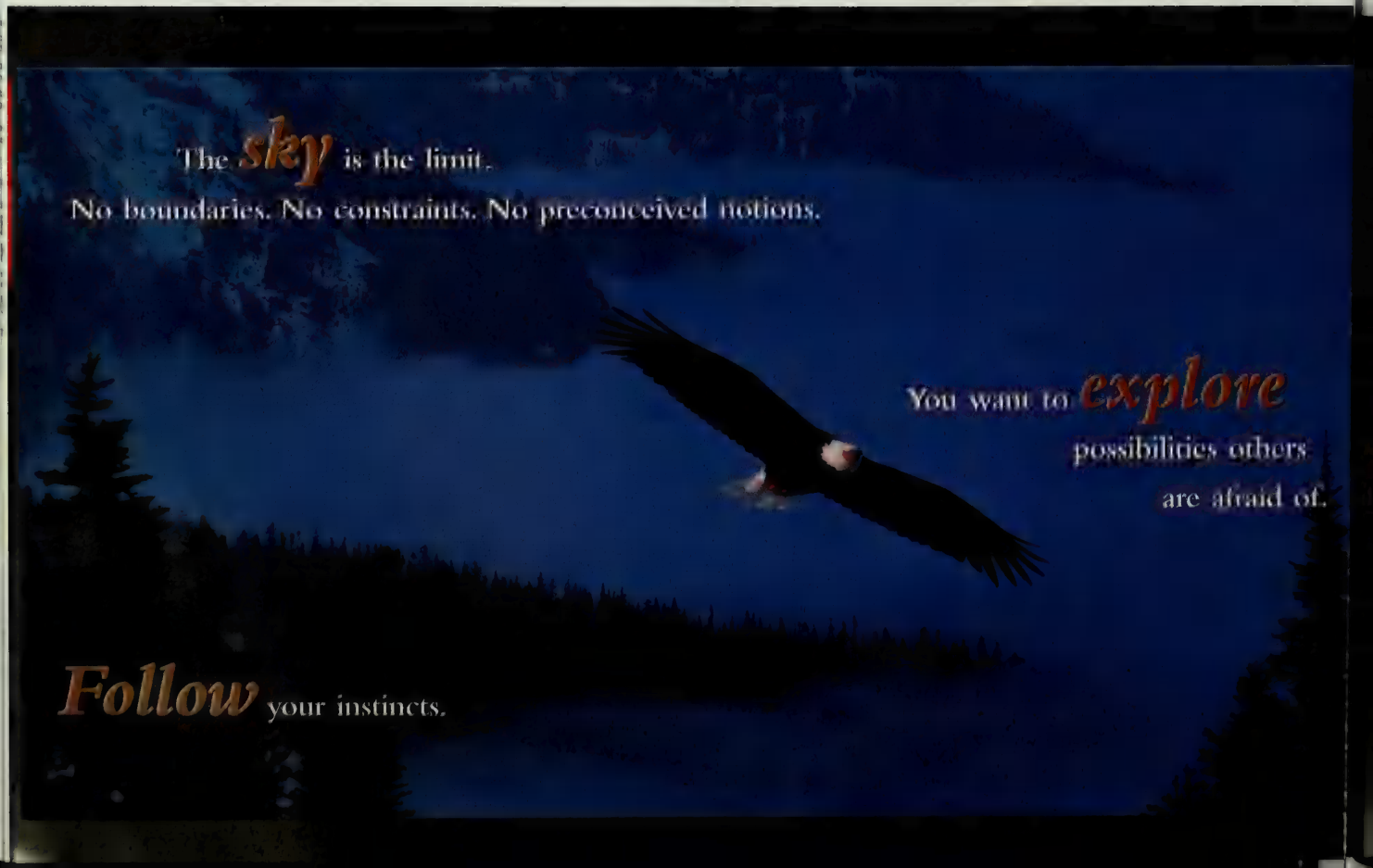


Paris's Gare du Nord, the busiest train station in Europe, as it will appear after renovation.

Radio show for architects and builders A talk radio show focusing on the construction and design industries went nationwide last month. *Build America,* hosted by a practicing architect and a building contractor–environmental consultant, can now be heard in 13 million homes in 28 states through the Cable Radio Network and FM radio. The show can also be accessed on the Web at www.buildamerica.com.

Well-tuned architecture Russell Johnson, designer of performance spaces for such venues as the Meyerson Symphony Center in Dallas and Symphony Hall in Birmingham, England, has been awarded the Wallace Clement Sabine Medal, the highest honor given for achievement in architectural acoustics. Johnson is a pioneer of adjustable acoustics, having introduced movable canopies that can adjust a concert hall for the intimacy of a trio or the larger sound of an orchestra. He is only the 11th person to receive the medal since it was first awarded in 1957.

Labor-intensive design The Hanjin Container Terminal in Long Beach, California, is unusual for a work of portside architecture. As is customary, union contracts required that the terminal administrative building fully segregate management's facilities from those of workers. Caldwell Architects and Robert Stewart, AIA, responded by introducing unifying elements: wrap-around brises-soleil and a uniformly



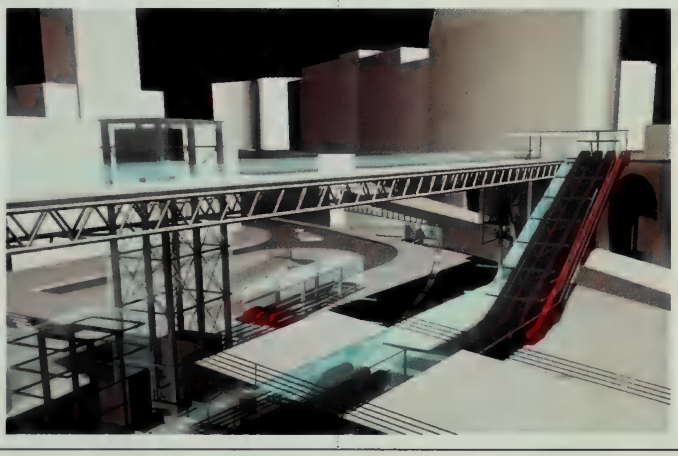
white exterior. Despite the tensions inherent in the program, the building's exterior presents a coherent, single-purpose entity among the clutter of port facilities. It earned an honor award from the Long Beach/South Bay chapter of the AIA, a rare occurrence for an industrial project.

Another new airport in China Building relentlessly, Chinese officials just commissioned the country's 10th airport in five years, the fifth to be awarded to Toronto-based B+H Architects International. The design for the $100 million first phase of the Hangzhou Xiashan International Airport incorporates curving glass that evokes both natural forms and the wings and fuselages of airplanes.

Firm's new home is old triumph Detroit-based SHG is relocating its offices to a building the firm designed in 1929. The 36-story Guardian Building, with its polychromatic brick, glasswork, and Native American–inspired ornament, is exemplary of Detroit's peculiar strain of Art Deco. The move allows 143-year-old SHG to proudly display its contribution to the Detroit skyline and regional architecture.

Tschumi and Merlini in Lausanne Construction has finally begun on the $30 million Interface Flon rail station in Lausanne, Switzerland, designed by Bernard Tschumi Architects and Luca Merlini, a former Tschumi employee. The underground station is the only part of the 1988 master plan for the industrial valley of the city to go forward thus far. Vertical glass elements and a pedestrian bridge join the station to the city, a revision of a plan to connect the areas with "inhabited bridges."

A new train station for Lausanne, Switzerland, designed by Bernard Tschumi Architects and Luca Merlini.



Skytherm house donated for study Harold Hay has donated his famous energy-conserving house in Atascadero, California, to the architecture school of California Polytechnic State University at San Luis Obispo. A passive solar heating and cooling system Hay invented uses pools of water on the roof to absorb and release solar energy and keep the house's interior temperature between 68 and 72 degrees year-round. Built in 1973 in the midst of an energy crisis, the house will now be used for student research and as guest quarters for visiting faculty.

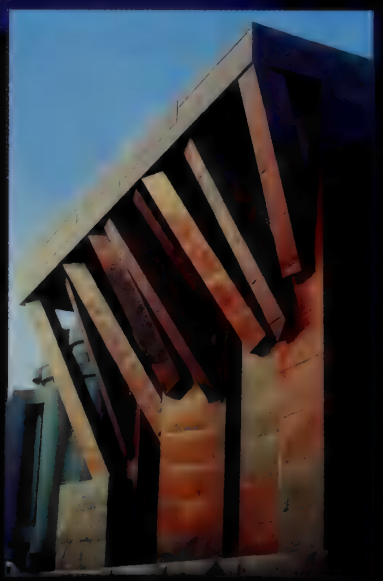
Philip Johnson is back A year and a half after his heart attack, Philip Johnson, FAIA, has started working full-time again. Despite his condition, the 91-year-old architect spends half the week traveling, often to Texas, where he is overseeing the construction of the Cathedral of Hope and the Amon Carter Museum. ■

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CIRCLE 28 ON INQUIRY CARD

Calendar

Signs and Wonders: The Lights of Times Square
New York City
Through March 8
Actual signs as well as photographic records are on display in this exhibition tracing the development of technology and imagery in Times Square advertising. New-York Historical Society. 212/873-3400.

Zaha Hadid: Painted Projects
San Francisco
Through March 10
The first solo museum presentation of the work of the Iraqi-born British architect includes two dozen paintings of cities and buildings in assemblages of exploded lines and planes. San Francisco Museum of Modern Art. 415/357-4000.

Temple Bar: Dublin
New York City
Through March 11
Several buildings designed by young Irish architects, all planned in 1991 by Group 91 for an area of Dublin's medieval city center, are presented. Urban Center. 212/935-3960.

New Courthouses in Historic Contexts
New York City
Through March 15
Models and renderings of 16 new courthouses designed by New York architects are displayed in this exhibition, sponsored by the AIA's Committee on Architecture for Justice. United States Court House at Foley Square. 212/683-0023.

Robert Adam: From Sketch to the Finished Drawing
New York City
Through April 5
An exhibition of the work of architect Robert Adam (1728–1792), considered the father of the Classical Revival in Britain, includes 65 drawings, models, objects, and books on loan from the Sir John Soane Museum in England. Frick Collection. 212/288-0700.

Fabrications
New York City, San Francisco, and Columbus, Ohio
Through April 12 (Columbus); April 28 (New York and San Francisco)
Organized jointly and presented simultaneously at the Museum of Modern Art in New York, the San Francisco Museum of Modern Art, and the Wexner Center for the Arts in Columbus, Ohio, this exhibition features full-scale commissioned projects by such architects as Eric Owen Moss, Smith-Miller+Hawkinson, Hodgetts+Fung, and Mockbee/Coker. 212/708-9400 (MoMA).

Full Circle: Invited Designs for Columbus Circle
New York City
Through April 15
Visions of Columbus Circle by the Olin Partnership, Kennedy & Violich, Dan Kiley, Machado and Silvetti, Michael Sorkin, Rafael Viñoly, and Weiss/Manfredi. Municipal Art Society. 212/935-3960.

Fresh Furniture
Pittsburgh
Through April 18
A survey of contemporary furniture designed and crafted in the United States. Society for Contemporary Crafts. 412/261-7003.

L.A. Obscura: The Architectural Photography of Julius Shulman
Los Angeles
Through April 18
A survey of 85 works by a photographer best known for his pictures of mid-century Southern California architecture, particularly the Case Study Houses. Fisher Gallery, University of Southern California. 213/740-4751.

Sweet Farm 1994–1997
Toronto
Through April 30
Documentation of a series of architectural, sculptural, and landscape interventions on an 85-acre site in Quebec by Christopher Pommer and Lisa Rapoport of PLANT. Ballenford Books. 416/588-0800.

Shiro Kuramata
New York City
Through May 2
Works on view by the late Japanese designer include 35 notable pieces of furniture, 30 smaller objects, and 20 photographs of interior designs. This touring exhibition is the first major retrospective of the visionary designer's work. Grey Art Gallery, New York University. 212/998-6780.

Japan 2000: Architecture for the Japanese Public
Chicago
Through May 3
This exhibition features architectural drawings, models, and photographs representing museums, dams, bridges, police stations, health-care facilities, and stadiums by well-known and emerging Japanese architects. Co-organized by the Art Institute of Chicago and the Japan Foundation. Art Institute of Chicago. 312/443-3600.

Arquitectonica: The Times Square Project
New York City
Through May 10
The first solo exhibition in New York of work by the Miami-based firm. The show focuses on the architects' design of a mixed-use complex combining a hotel with entertainment and retail components, to be built at 42nd Street and Eighth Avenue. Cooper-Hewitt Museum. 212/849-8300.

Civics Lessons: Recent New York Public Architecture
Washington, D.C.
Through May 11
Projects in New York initiated by public agencies working with architects in the period from 1985 to 1995. Organized by AIA/New York and the New York Foundation for Architecture, the show emphasizes the link between public investment in architecture and the economic, social, and aesthetic quality of the city. National Building Museum. 202/272-2448.

The Gardens of Rome
Atlanta
Through May 17
Etchings of the Villa Borghese gardens, the Farnese gardens, and the Belvedere gardens of the Vatican, from the 17th-century *I Giardini di Roma,* by Giovanni Battista Falda and Simone Felice. Michael C. Carlos Museum at Emory University. 404/727-4282.

Alvar Aalto: Between Humanism and Materialism
New York City
Through May 19
Marking the 100th anniversary of Aalto's birth, this large-scale retrospective is the first in the United States to present original drawings and models of work by the renowned Finnish architect, designer, and town planner. Included are video walk-throughs of several of his most important buildings. Museum of Modern Art. 212/708-9400.

Montréal Métropole
Montreal
Through May 24
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Toy Town
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Through May 31
An exhibition exploring how toys from several cultures have represented the village, town, and city. Twenty-six toy towns from the collection—ranging from early 19th-century German wooden villages to recent CD-ROMs—are on display. Canadian Centre for Architecture. 514/939-7000.

(continued on page 177)

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Assessing the STATE of ARCHITECTURAL CRITICISM in Today's Press

by Suzanne Stephens

Listen to any conversation among architects today and you can sense the malaise and cynicism about the state of architectural criticism in magazines and newspapers. There seems not to be as much of it around as there was 20 years ago. With few exceptions, the criticism that does exist is enervated. Journalistic or practical criticism relies too much on description or impressionistic response (such as calling a building "wonderful") and lacks a conceptual framework. While the United States has never been known for the consistently vigorous criticism that survives in England, it has had its higher moments.



EDITORS AT SOME NEWSPAPERS SHOW LEVELS OF KNOWLEDGE AND INTEREST IN ARCHITECTURE THAT MAY BE "BELOW [THOSE] OF THE READERSHIP."

–Ada Louise Huxtable

In addition, the most intense discussion in the U.S. now occurs in small academic journals. Indeed, theory appears to be a growth industry supported by books, pamphlets, symposia, and doctoral programs at architecture schools. Yet here language is often too abstract and the content so arcane that a larger public, even architects, can't understand it.

Because of the language (and thought) barrier, a split has occurred between "practical" criticism by journalists about cities and buildings and theoretical criticism by academics investigating certain philosophical issues relating to architecture.

The split didn't really exist before the 1980s. Practice had been integrally wedded to theory, and during some periods, such as early Modernism, both were endowed with an overriding sense of purpose. Now this vision is missing. At various times in the past 150 years critics have been accused of emphasizing certain criteria to the exclusion of others. Aesthetics were thought to have dominated structural and programmatic expression, for example, or functionalism was stressed more than symbolic representation and contextualism. Today many critics find "criteria" too constraining. What should criticism do or be then?

First let's make it clear what we mean by criticism. Using both the senses and the intellect, the critic analyzes and evaluates the built environment and its effect on its inhabitants and users. As Miriam Gusevitch articulates so well in *Drawing Building Text* (1991), "Criticism is riskier than commentary. It is willing to judge and to condemn, to stake out and substantiate a particular position.

Suzanne Stephens is a contributing writer for Architectural Digest *and is currently working on her doctoral dissertation on American architectural criticism at Cornell University.*

Serious criticism is not sheer negativity; it is the careful and thoughtful disclosure of dimensions that might otherwise elude us."

While Gusevitch's last point makes sense, for all practical purposes, criticism still means taking a stand that will point out the flaws of the building or urban environment.

Journalist critics: a report from the front

Ironically, journalistic criticism once seemed on the ascendant. Ada Louise Huxtable, the architecture critic and editorial board member of the *New York Times* from 1963 to 1982, was largely responsible for bringing a public consciousness of architecture to the newspaper reader. *The Times*, of course, was a top-notch vehicle; she, in turn, was the cause for its becoming an irrefutable authority in architectural matters.

THE ROLE OF THE CRITIC IS "TO INTERPRET THE BUILDING. EVALUATION IS ONLY PART OF WHAT CRITICS DO."

–Herbert Muschamp

Other newspapers began systematically adding architecture critics. Cathleen McGuigan, senior editor for the arts at *Newsweek*, notes that besides more criticism, extra coverage of trends, projects, and personalities was encouraged by Postmodernism and then by Deconstructivism. "The styles were placed within clearcut categories with key players that the public could relate to, like football teams," she notes.

But faddish proliferation of styles led to disenchantment; economic recession in the late 1980s caused a drop-off in construction, and the downsizing in newspapers and magazines shrunk the space devoted to architectural criticism. For example, Diana Ketchum, architecture critic of the *Oakland Tribune* from 1979 to 1993, and Michael Sorkin, architecture critic of New York's *Village Voice* from the late 1970s to the late 1980s, weren't replaced when they left their respective papers. After Beth Dunlop, the architecture critic of the *Miami Herald* from 1979 to 1993, departed, her spot was taken by a "writer." As Dunlop explains, "The newspaper didn't want 'criticism'; it wanted writing that would boost projects." Jayne Merkel, the architecture critic at the *Cincinnati Enquirer* from 1977 to 1988, also ran into boosterism problems on the part of the city's economic and real estate interests. As she comments, "The paper liked the idea of an architecture critic, it didn't like the reality."

One exception to this trend is Chicago, says Blair Kamin, the architecture critic for the *Chicago Tribune* and a contributing editor to ARCHITECTURAL RECORD. Not only did the *Tribune* make Kamin architecture critic in 1992, shortly after his predecessor Paul Gapp died, but it has given him a great deal of space in its daily and Sunday editions. In addition, the Chicago Sun-Times has an architecture critic, Lee Bey.

On the West Coast, the *Los Angeles Times*, without a steady architecture critic in the palmy days of criticism in the 1980s and 1990s, finally hired Nikolai Ouroussoff in 1996. However, in 1997 its well-regarded editor, Shelby Coffey, was dismissed, and the newspaper has been reorganized with a heavy business and editorial interdependence. Ouroussoff is still optimistic. Although he doesn't have a regular column, he publishes frequently in the Calendar section and writes profiles and news stories.

Another L.A. paper, the *Herald-Examiner*, had an architecture and urban design critic, Joseph Giovannini, from 1979 to 1983. Fortunately for Giovannini, when the newspaper folded in the mid-1980s, he had already joined the *New York Times*'s Home section. Today Giovannini, who writes criticism for *Architecture* magazine and contributes columns to the Home section of the *Times*, finds his work often is a "hybrid of criticism and feature writing." He says this is fine: "I don't have to engage in a pure act of criticism to enjoy writing."

The dominant trend in general interest and consumer magazines over the last 20 years, however, has not been toward a hybrid that includes any "criticism." Instead, it is weighted even more heavily to profiles and biographies, where criticism may be an uncomfortable intrusion into the tone of the piece. Glossy residential magazines are understandably reluctant to eviscerate a house the client has agreed to publish, thereby embarrassing him or her and, of course, alienating the designer. In both the consumer press and the professional press the increase in color photography over the last 30 years, yielding highly seductive presentations, has tended to render negative commentary anomalous.

Vitriol from the past

Tough journalistic criticism was not uncommon in more genteel times. In the late 19th and early 20th centuries Montgomery Schuyler often castigated examples of eclecticism in the pages of the *New York World*, the *New York Times* and ARCHITECTURAL RECORD. His most vitriolic pieces were anonymous, especially in his "Architectural Aberrations" series for RECORD. Later Lewis Mumford, known for his humanist vision, wasn't averse to escoriating New York's Chrysler Building in the *New Republic* in 1931, on visual grounds.

OK, so that was then. But contentiousness was even more pervasive just ten years ago in general audience magazines than it is today. As the articles on Michael Graves's Whitney addition, Gwathmey Siegel's



"POINTS OF ACCESS" ARE NEEDED TO ENCOURAGE "MORE VOICES OF CRITICISM AND, WITH THEM, MORE RIGOROUS CRITICISM."

–Cynthia Davidson

Guggenheim wing, and Moshe Safdie's Coliseum project show, criticism wasn't just a polite discussion of favorable and weak attributes: it was condemnatory and activist.

What has happened since then? Are there fewer controversial projects? In a sense, yes, since construction did fall off. McGuigan feels the sense of importance of architecture has decreased: "With the exception of Frank Gehry's Bilbao Guggenheim and Richard Meier's Getty Center in L.A., there are not many must-do stories." Linked to the perceived lapse in public interest in architecture, McGuigan adds, is the increased devotion to mass culture in the weekly magazines. With a crunch in pages, the latest "alien" film gets the space, not architecture.

Dunlop contends, "Today the daily newspapers are wimpy." Furthermore, she adds, "They rely on focus groups and market studies rather than carving out a mission and saying, 'This is what we stand for.'"

Dilemmas of timing

Since architecture is treated as an "event," as in the case of the Guggenheim Bilbao or the Getty Center, the deadline determines whether the criticism is substantive or hasty. The *Chicago Tribune*'s Kamin is particularly vehement about "jumping the gun." When McGuigan wrote in the January 13, 1997, issue of *Newsweek* that Gehry's Guggenheim Bilbao was "shaping up to be a masterpiece," Kamin responded in the *Trib* that this article, published eight months before the opening—before all the cladding was up, much less the art installed—was "the most egregious example of a broader problem that warps our thinking about the buildings that shape our world." Fortunately for *Newsweek*, McGuigan's perceptions held up, and subsequent criticism raved not only about the exterior but also the interior setting as a dramatic container for art. Nevertheless, the future is not always so perfect, and Kamin's point is well taken: more time and actual evidence can only help criticism. But tell that to an editor who wants to be first with a story.

Having time to write is extremely important, maintains Ada Louise Huxtable, now the architecture critic for the *Wall Street Journal*. No longer does Huxtable put out a weekly column, as she did at the *Times*. At the *Journal* her agreement calls for a minimum of six pieces a year, which usually appear on a Thursday.

Herbert Muschamp, currently the architecture critic for the *New York Times*, also has felt that the *Times* deadlines were too draining. He quit the paper last winter to join *The New Yorker*, had second thoughts after a meeting, and returned to the *Times* with an arrangement: "I begged to be relieved of the Sunday Arts and Leisure column for a year and to write in other sections," he explains. "The Sunday editors need to fill space every three weeks with articles of national interest. There's no flexibility. And I did that for five years without a break."

This is a sympathetic deal for the critic, but readers who expect architecture to be served up on Sunday are left looking in vain among the ads for antiques and art. You get the impression that architecture has been demoted. This must really appear to be the case to national readers in the habit of getting the *Times* only on Sundays.

Needless to say, the climate of support for criticism (and the critic) is very important. Often critics say the problem with criticism is the editors who lack knowledge or interest: "It's sometimes below the level of the readership," says Huxtable. Diana Ketchum notes, "The editors often ask if this architecture is part of a trend. You have to justify the piece." Martin Filler, who has been a long-time contributor to the *New York Review of Books* and to *House Beautiful*, observes that periodicals don't know why they are doing a story. "Fashion-oriented publications often don't engage in sufficient discussion with the writer about how they see the article. They have an unarticulated vision," he says.

Paul Goldberger, the main architecture critic at the *Times* from 1981 to 1992, headed for *The New Yorker* after Muschamp had decided against it. There is no regular slot for "The Skyline," the column that Lewis Mumford made famous. "Every idea has to sell itself, not just the quality of writing," Goldberger says.

The late Brendan Gill, the long-time drama critic for *The New Yorker* and then its architecture critic before Goldberger came on board, said that weekly reviews of plays, movies, and art exhibitions still have a place. But, as Gill pointed out in an interview shortly before his death, "Reviewing tells the readers whether to see the play; criticism addresses the work of art and the maker."

Being nice or nasty

Highly charged or even mean-spirited criticism is, of course, a good read. Michael Sorkin's diatribes against Paul Goldberger and Philip Johnson in the *Village Voice* in the 1980s made him famous, or notorious, in New York architectural circles. But more compelling than Sorkin's argument about abuse of power was the issue involved in using ad hominem assaults to make a point about the work. Today Sorkin denies malevolent intentions, although he acknowledges he might have influenced more critics to engage in similar tactics.

Critics often hate to cause pain to architects by being negative about them or their work. And so they lie low. "Terrible things are done in cities in urban design and architecture, and the critics don't stand up and say so," says Robert Campbell, architecture critic of the *Boston Globe* for 24 years. "I myself don't do enough of it: I'm nice," he says. "The critics in England are more brutal." Muschamp also says, "I don't get pleasure out of causing pain." He argues that the role of the critic is "to interpret the building. Evaluation is only part of what critics do." Others, such as Merkel, agree with this orientation.

Professional magazines also may hate to hurt an architect's feelings. But the reasons are more practical. If criticism is negative, architects may decide to be difficult in future situations since they control access to their presentation drawings and often share the high costs of photography with the magazine. Now, with only two magazines where once there were three or even four journals, architects have little choice but to cooperate if they want to be published.

Already both RECORD and *Architecture* are conscientiously publishing more criticism, although it is often assigned to contributors instead of staff writers. While this policy placates an established architect who may resent being criticized by a lesser-known staff member—or worse, some "kid"—it also limits the chances of bringing up generations of journalistic critics who learn on the job. This strategy tends to restrict critical coverage to the "big event" by the big-name architect. The American landscape would be better served by serious evaluations of all the many important but low-profile buildings that are published.

The power of the gray (now color-rinsed) lady

Critics are criticized too, just not much in print. The architecture critic for the *New York Times* is read, talked about, and quoted more than any other, owing to the reputation and reach of the "gray lady." Since Muschamp pursues a very personal style of criticism, he is perhaps more controversial than Goldberger. Not that Muschamp's approach is anything like Goldberger's, who, as the joke goes, so desired to appear balanced that the reader got whiplash going from one side of the argument to the other. (This mannerism seems to have been jettisoned in his writing for *The New Yorker.*)

Supportive readers of Muschamp find refreshing his filtering of building analysis through his personal and emotional state; others consider it narcissistic and self-absorbed. Muschamp rejoins by saying that "narcissism, voyeurism, and psychology are all interesting to me intellectually. I've been a practicing Buddhist for years," he adds. "In Buddhism, enlightenment means a fusion of subjective perception and objective reality."

Critical criteria change over time

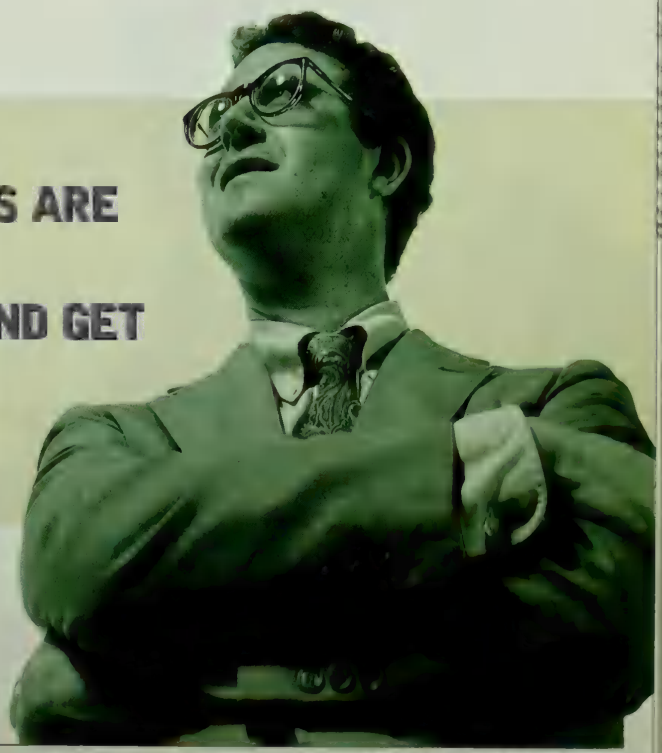
How the critic frames the argument is one question; another is what criteria are used to evaluate the architectural work. Since architectural criticism began appearing in American journals in the early part of the 19th century, different criteria have developed according to values and design principles of the time. The 19th-century emphasis on visual aesthetics based on classical harmony, proportion, and rhythm gave way to the belief in truthful expression of materials, structure, and function, along with "propriety."

As functionalism and honesty of structural and material expression gained ascendancy in the early 20th century, aesthetic criteria began to include Modernist attributes of volume (as differentiated from mass), irregularity (as opposed to symmetry), and absence of ornament. By the middle of the century, kinesthetic experience, that is the visual and haptic sensations the observer perceives moving through architectural space, began to manifest itself more dramatically in architectural criticism. In the late 20th century, symbolic representation, contextualism, and authenticity came to the fore, followed by a reemphasis on tectonics of craft, structure, and space.

When many journalistic critics writing today are asked about their criteria, they assume the term refers to an ideology or a set of unidentified rules. Since evaluation is based on criteria formed by the intellectual climate and conditioned by the values and attitudes of the times, the tendency to regard criteria with suspicion is mystifying. Robert Campbell suggests that a critic may not be aware exactly of their presence but points out, "On some level, you are looking for something that the

SINCE ARCHITECTURE IS TREATED AS AN "EVENT," CRITICS ARE SOMETIMES PRESSURED TO "JUMP THE GUN" AND GET A STORY BEFORE THE BUILDING IS COMPLETED.

–Blair Kamin



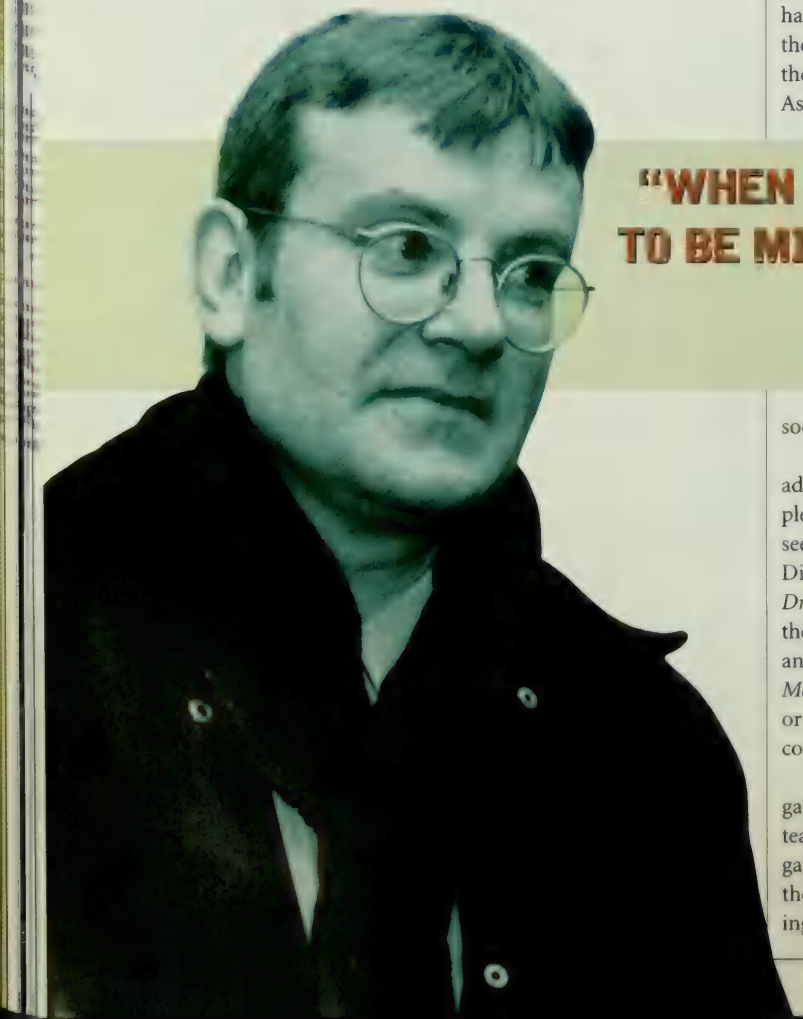
Muschamp's own feelings about a building or urban complex are, as he puts it, "nailed to the mast." But he defends his personal form of criticism as analytic rather than impressionistic. As he explains, he attempts to investigate the psychological motives of the architects and clients as well as his own response to the work. He also considers the way "psychological conflict manifests itself in the city."

building will help you say about issues that go beyond the building."

So what happens in the final analysis? In addition to all the external factors outlined above, what unacknowledged factors and psychological pressures affect judgment? The absence of well thought-out standards for evaluation, a weak cultural context for debate, and the critic's need to write for several audiences with different needs and levels of knowledge are significant barriers. Add to that the lack of editorial support, too little time, even too little money, and it is not hard to see how the critical operation is hampered.

The ultimate question, of course, is does all of this matter? Do the journalistic critics have any influence? Sorkin has said, "I flatly refuse to acknowledge having had any impact at all in the real world." Yet Kamin and Dunlop point to certain examples in which taking a strong position did affect the outcome. Other critics, such as Ouroussoff, say they can't claim to have stopped or promoted a project, but at least they have stirred up debate and discussion.

Whether Muschamp's personal approach is something that will change the practice of criticism in positive or negative ways depends on one's view. Joseph Giovannini says that "through his 'identity criticism,' Muschamp has broadened the scope of what can be done with criticism today." Diana Ketchum warns, however, that "subjectivity can be detrimental in writing about architecture if the critic gets trapped into his or her own autobiography and can't get beyond that to engage anyone else."



"WHEN THEORY IS PREPARED TO BE MICROWAVEABLE, IT HAS NO VALUE."

–Mark Wigley

Theoretical criticism: a growth industry

Over the last 30 years theoretical criticism, as distinguished from practical or applied criticism, has been a growth industry in academe. Theory has, of course, been integral to architectural practice and criticism since before Vitruvius.

Nevertheless, the latest era of theoretical research in architecture is different in its loosened allegiance to practice and in its separation from the concerns (including accessibility of prose) of journalistic criticism. In the 1980s a younger generation of architectural theorists appeared, trained in architecture and often equipped with doctorates. They continued the previous generation's attempt to incorporate concepts from other disciplines, such as literature, philosophy, and psychology, into architectural discourse but changed the emphasis.

"For the first time specialists in architectural theory emerged who no longer claimed to be practitioners—and they had no guilt about it," explains K. Michael Hays, founding editor of *Assemblage*, the leading American journal of theoretical criticism. To be sure, exceptions remained, such as Peter Eisenman and Bernard Tschumi, who theorized what they practiced, and vice versa. Yet something else was in the air.

The focus of discussion shifted from ideas about built work to ideas about ideas. The split between theory and practice, and between theoretical critics and journalistic critics, widened quickly to a chasm during the 1980s, a problem pointed out as early as 1987 by Catherine Ingraham, a theorist writing in *Inland Architect*. One factor encouraging the split, observes Joan Ockman, editor of *Architecture Culture, 1943–1968* (1993), was that scholars were wary of the way Postmodern architects had seized upon and watered down semiotic or structuralist theory in the late 1970s. While the hermetic impulse of the 1980s may have kept theory from being too quickly consumed, it also had its down side. As Mary McLeod, a Ph.D. trained as an architect, has pointed out, the social and political dimension of architecture was still being ignored.

Now, however, the breach between theory and practice is being addressed. Grounding theoretical discussion in actual architectural examples or in sociocultural issues such as gender, race, and identity politics seems on the rise. Books such as *Sex of Architecture* (1996), of which Diana Agrest is a co-editor, and Mark Wigley's *White Walls, Designer Dresses: The Fashioning of Modern Architecture* (1996), as well as history-theory books—such as Beatriz Colomina's lucid discussion of Adolf Loos and Le Corbusier in *Privacy and Publicity: Modern Architecture as Mass Media* (1994), or George Baird's *Space of Appearance* (1995), uniting theory and building criticism—do much to integrate the world of ideas with concrete matters, to the benefit of both.

In the meantime, opinion continues to differ about whether the gap exists or not, and if it does exist, if it is a problem. Mark Wigley, who teaches the theory of architecture at Princeton, argues that there is no real gap between theorists and practitioners, and that if there is a gap between theoretical critics and journalistic critics, that's as it should be. Claiming he has noticed a wide audience internationally for theory, Wigley

maintains, "The most astute statements I've heard come from practicing architects." He doesn't feel, nevertheless, that journalistic critics should bone up on theory and take it to the masses. "When theory is prepared to be microwaveable, it has no value," he states. "Also, the journalistic critic no longer is acting as the public's representative." Agrest also sees the need for separate languages for separate audiences." "Architects are like physicists," she says. "They have to work in a special language to advance the state of science and develop concepts."

"TODAY THE DAILY NEWSPAPERS ARE WIMPY... THEY RELY ON FOCUS GROUPS AND MARKET STUDIES RATHER THAN CARVING OUT A MISSION."

–Beth Dunlop

At the same time certain theorists, such as George Baird, a Toronto architect and Harvard professor, argue that journalistic criticism is not "rigorous." According to Baird, "It would be healthier if there were more of a crossover." Cynthia Davidson, editor of *Architecture New York (ANY)*, an "intellectual tabloid" which is part of Peter Eisenman's Anyone Corporation, contends that "points of access" are needed to encourage "more voices of criticism and, with them, more rigorous criticism."

One of the most insightful examples of theory applied to practice was demonstrated by Peggy Deamer in the essay "The Question of Form: Probing the Work of Charles Gwathmey" in *ANY* 11 (1995). Deamer, an architect with a Ph.D., analyzes Gwathmey's early work according to his formalistic use of composition, abstraction, and space. Rather than faulting Gwathmey, as others have, for being overly formalistic, she argues that he hasn't taken his formalism far enough into the larger "realm of material, tectonics, scale, and bodily enjoyment."

With an expanded definition of formalism, Deamer's discussion points to an assessment based on one's own subjective experience determined by visual and kinesthetic factors. She is not alone. Others are investigating "the place of the subject in perception and experience of the work of architecture," to put it in Agrest's words. But they all underscore the danger flowing from this inward-turning type of investigation: the exclusionary trap of purely autobiographical exploration.

Criticizing the critics

The question that needs to be confronted is how far a critic can go with communicating his or her subjective experience to the reader before the assessment turns too personal. To function successfully, the subjective response still has to be shared or understood on a generalized level.

This subjectivity issue was highlighted last fall in a much-discussed passage by Herbert Muschamp on the Guggenheim Bilbao in the *New York Times Magazine* (September 7, 1997). Muschamp, comparing Gehry's shimmering, curvilinear, titanium-clad building to Marilyn Monroe, mused, "What twins the actress and the building in my memory is that both of them stand for an American style of freedom. That style is voluptuous, emotional, intuitive and exhibitionist. It is mobile, fluid, material, mecurial, fearless, radiant and as fragile as a newborn child. ...And when the impulse strikes, it likes to let its dress fly up in the air."

Clearly, the association is provocative. That passage in particular



generated vociferous remarks from readers. Many liked it for its arresting imagery; others thought it pandering. This reader was left with several questions, such as why a 1950s American sex symbol is a relevant image for a work of architecture, a museum, in the Basque region of Spain in 1997. Without Muschamp's development of the implications of his analogy or the interpretations of freedom underlying his phrasing, one senses all this is merely an attempt to make a visual link between billowing skirts and wavy walls seem substantive.

Nevertheless, Muschamp's acknowledgement of the subject's position in criticism is important, since the critic who authoritatively delivers opinions as if they are objective fact has proved too often to be myopic. Linked to subjectivity is the kinesthetic experience, or the critic-as-subject perceiving the building on many different levels as he or she walks through it. Since this experience is shared by others as well as felt by the subject, it provides a basis for evaluation that can be understood by the general public as well as professionals.

While the kinesthetic experience is not recognized as a familiar criterion for judging architecture, as is aesthetics or functionalism, it nevertheless appears in strong and weak description, in any number of appraisals. One rich example is Richard Meier's Getty Center in Los Angeles, which opened with enormous critical coverage in December. In discussing the Getty, Martin Filler, Lawrence Wechsler, Nikolai Ouroussoff, Robert Campbell, Aaron Betsky, and Blair Kamin, among others, invoked coherence as a criterion for *(continued on page 194)*



Opposite: *Burial, Angles with Backhoe*, 1994. Right: *Theatre*, 1994. Below: *Museum with Excavated Courtyard*, 1994.



Through the Viewfinder: Worldly Remains



As a photographer, Richard Barnes leads a double life. He divides his time between commissioned work for architects and design magazines and longer-term "personal" projects such as the black-and-white photographs of excavations in Egypt and Lebanon that he has been taking over the past seven years.

In 1994 these two worlds merged when Barnes was hired by the Fine Arts Museum of San Francisco to document the renovation and expansion of the California Palace of the Legion of Honor. While digging trenches for the building's seismic upgrade, workers uncovered a 19th-century burial ground—some 800 graves from what was once the Golden Gate Cemetery. Barnes was there to capture the discovery (and its implications) on film.

His photographs of human remains juxtaposed with construction debris are a haunting portrait not only of a museum's role in society but also of the architectural endeavor. "Mid-excavation photographs of the museum," says Barnes, "reveal a symmetrical facade above and a cavernous underworld below, conjuring images of the human psyche—the ordered conscious ideal looming over the hidden, dark unconscious realm." Part of a traveling exhibition entitled "Still Rooms and Excavations," the photographs will be on view at the International Museum of Photography at the George Eastman House in Rochester, N.Y., in June and at The Architectural League of New York in the fall. *Karen D. Stein*







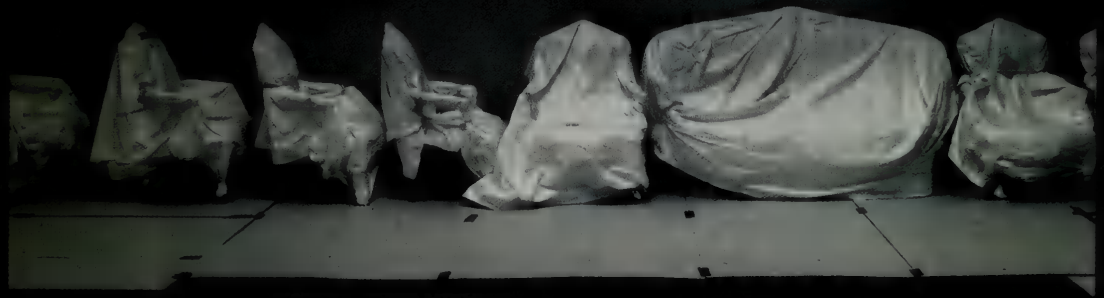
Above: *Mythological Painting and Steel Cabinet*, 1995.

Top left: *Grand Court, Ductwork*, 1994.

Bottom left: *Excavation with Buttons*, 1994.

Opposite top: *Gallery Installation with Chairs*, 1995.

Opposite bottom: *Bones on Plywood*, 1994.





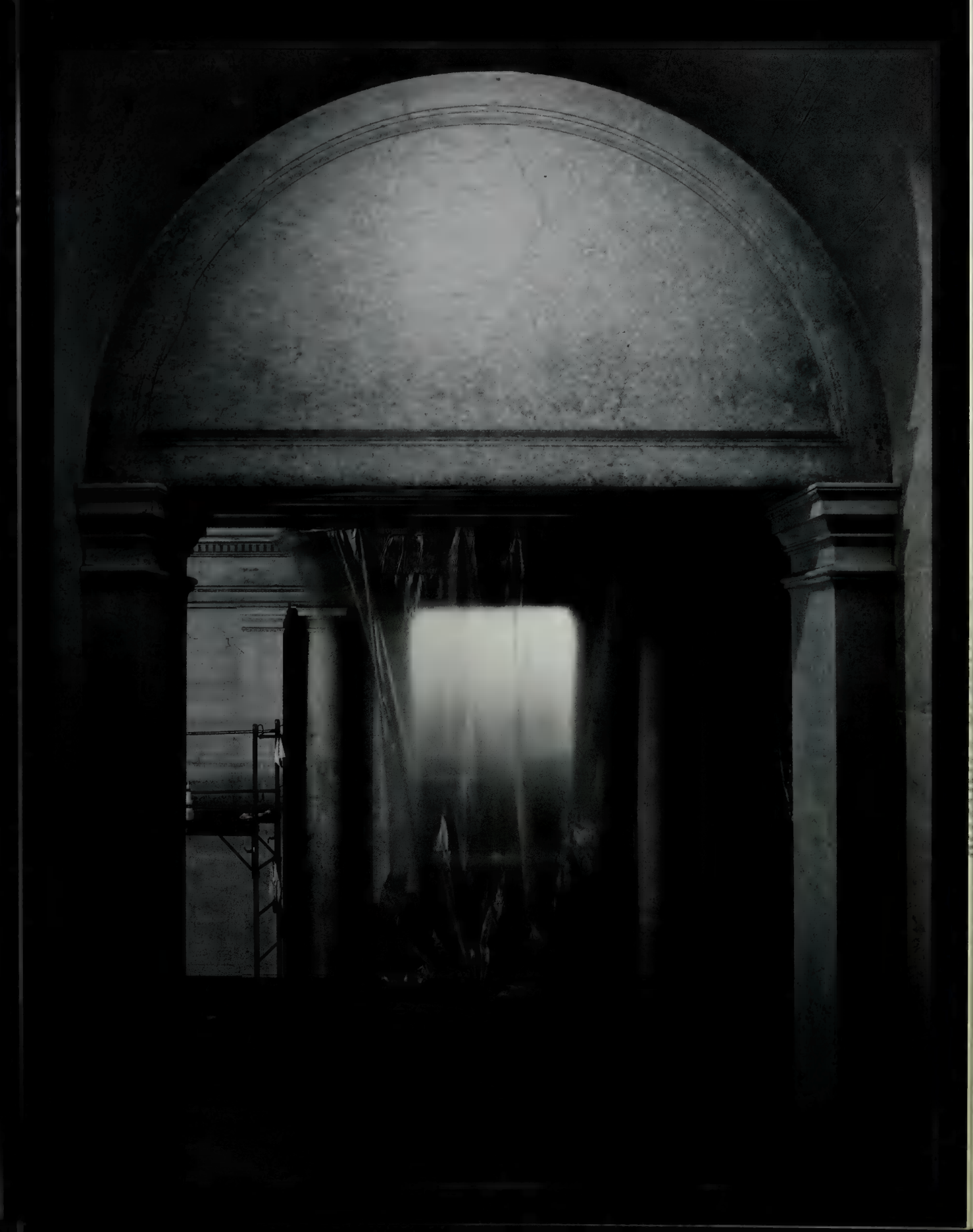




Top left: *Prone Religious Figures*, 1995.

Bottom left: *Burial with Nails*, 1994.

Opposite: *Arch*, 1994.



Key Players in Health Care: The Clients To Know

NEW TECHNOLOGIES AND NEW WAYS OF DELIVERING HEALTH CARE ARE RESHAPING THE FIELD. HERE'S A LOOK AT SOME OF THE COMPANIES LEADING THE WAY.

by Clifford Pearson

After a decade of revolution in the health-care field, rapid change will remain a constant for the foreseeable future. Mergers and acquisitions of hospitals, the expansion of managed care, a growing emphasis on outpatient treatment, and a new generation of medical and electronic technologies are continuing to transform the face of the industry. In the process, the key players in the field are changing, and so are their needs for new facilities. To get the commissions for the health-care facilities of the next century—and to design them intelligently—architects will have to know who the hot clients are and where they are headed.

The good news is that the changing industry is creating many new opportunities. The bad news is that a lot of old clients are disappearing. "We will see consolidations and mergers, even hospital closures, continue through the remainder of the 1990s and into the next century," says Richard Wade, a senior vice president for the American Hospital Association. "The fact is that we still have excess capacity," he says. For example, the occupancy rate of beds in community hospitals in the United States is less than 60 percent, reports Wendy Everett, director of the Institute for the Future, a Menlo Park, California, think tank. In 1990 there were 950,000 beds in community hospitals nationwide. By 2010 that number is expected to drop to 650,000, says Everett.



Coming to a strip mall near you: A. O. Fox Memorial Hospital in Oneonta, New York, converted a vacant shopping center into a 90,000-square-foot outpatient clinic (above) last August. The clinic has medical offices, outpatient testing, and even a café.

Driving most decisions is the need to contain costs. Although the nation's health expenditures as a percentage of the gross domestic product continue to rise (they're nearly 15 percent today), the growth rate of health-care costs is dropping—to 9.3 percent in the public sector and 4.8 percent in the private sector for the period 1991 to 1995, compared with rates of 13.3 percent and 10.6 percent for the period 1960 to 1990. The growth of managed care, of course, has been one of the most important factors in reining in health-care costs. In 1985 only about 22 million Americans were covered by health-maintenance organizations (HMOs); by the middle of 1996 that figure had exploded to 62 million.

Not surprisingly, hospital construction has dropped significantly during the past decade, from a peak of nearly 60 million square feet in 1988 to about 20 million in 1996, reports the F. W. Dodge division of the McGraw-Hill Companies' Construction Information Group. Opportunities abound, however, in clinics, which provide a growing array of outpatient services and are being built faster than ever—accounting for more than 60 million square feet in 1997, up from just 15 million square feet in 1991. Dodge is forecasting a mild 3 percent drop in total health-care construction for 1998, with the building of hospitals remaining flat and that of clinics easing off its recent surge.

With so much change happening, it's not easy for architects to know how to devise strategies for success in this field. One way to plan for the future, though, is to understand the driving forces in the industry as well as the key players. To that end, this article identifies four types of organizations that are leading the way to the future: HMOs; hospital networks; disease-management programs; and technology companies.

The managed-care revolution

Although consumer criticism of HMOs and calls for more government regulation of managed care are getting louder, there seems to be little chance that the growth of HMOs will be stopped. "Managed care is here to stay," states Wayne Ruga, president and CEO of the Center for Health Design. Because they reduce costs and encourage a less centralized system of delivering health care, HMOs are positive forces in the industry, he says. Rather than relying mostly on expensive hub hospitals, HMOs are "unbundling" health services and encouraging providers to offer more



Sutter Maternity and Surgery Center in Santa Cruz, California, designed by Kaplan McLaughlin Diaz, is part of a new generation of specialized-care facilities where design helps sells the product.

care at outpatient centers, neighborhood clinics, and other freestanding facilities. "HMOs are getting more services out of the hospital and into the community," Ruga reports. He sees more moderately sized outpatient facilities (around 30,000 square feet) being built adjacent to banks, food markets, post offices, libraries, day-care centers, and other places connected to most people's daily activities.

"HEALTH CARE IS MOVING AWAY FROM BEING A COTTAGE INDUSTRY AND TOWARD BEING A COMPETITIVE, CUSTOMER-SERVICE INDUSTRY."

A good example of getting health care into alternative locations is a new outpatient facility built in an old shopping center in Oneonta, New York, by A. O. Fox Memorial Hospital. So far about two-thirds of the 140,000-square-foot strip mall has been converted by the hospital and includes offices for doctors, a cardiac and pulmonary rehabilitation center, an outpatient testing facility, a community-education center, an OB-GYN and women's wellness clinic, and even a cybercafé where patients can get food and surf the Internet for health information. In the past, most of these services would have been provided at the hospital, where space costs about $150 a square foot, says Roger Panther, president of facility development for Quorum Health Resources, which owns 19 hospitals and manages 244 others around the country. According to Maggie Barnes, director of communication for Fox Memorial, the hospital's new outpatient center cost $8 million, which includes the land and the conversion of 90,000 square feet for the first phase. Not only is this arrangement much less expensive than building at a hospital campus, but it is also more convenient and less intimidating for patients.

Hospitals find strength in numbers

In the not-too-distant past the independent hospital was a fixture on the American health-care landscape. Today it is a dinosaur, pushed to the brink of extinction by the growth of networks and chains of hospitals.

Harvard Pilgrim Health Care

One of the oldest managed-care organizations in the country, Harvard Pilgrim Health Care, is looking to the future. In the process, it is rethinking the way its facilities are organized to take full advantage of computer technologies that will soon control everything from record keeping to the way patients are checked in.



"We not only have to address the computer systems in use now, we have to think to the future, to where we'll be in another 30 years," says Helen Bowditch, director of strategic facility planning for the Brookline, Massachusetts–based company. Someday, according to medical scientists, robots will guide the hands of surgeons, biosensors will track the progress of the chronically ill, and patients will consult with physicians at remote locations by video technology.

Within the next few years, almost all the paperwork involved in caring for a patient will be stored and transmitted electronically. That will mean that retrieving a complete patient history, making progress notes, taking vital statistics, and placing orders at the pharmacy will all be done by computer. The same system will be used for marketing; patient names, for example, will be sorted so people can be notified electronically when they're due for immunizations or tests.

Harvard Pilgrim, founded in 1969 as the Harvard Community Health Plan, one of the first HMOs in the nation, is the product of a series of mergers. The company provides health care to 1.2 million members via 25,000 physicians, many of whom are in group practices, and 138 hospitals. All of the company's affiliated physicians, health-care centers, and hospitals are located in New England.

Greater specialization

According to Gordon Moore, a professor of ambulatory care and prevention at Harvard University's medical school, with which Harvard Pilgrim is affiliated, hospitals will become increasingly specialized. "The only people using them will be those who are absolutely too sick to be at home," he explains. All but the most critical medical procedures will be done at remote health-care facilities.

Even now, oncological care has moved away from the hospital and into independent centers. There, patients report to chemotherapy, radiation, or infusion rooms. "All this makes the treatment more accessible, more personal, and less taboo. You no longer get locked away in a hospital somewhere if you have a serious, chronic disease," Bowditch says.

Ultimately, health-care centers will become multispecialty practice sites organized according to the needs of the users. Instead of grouping one kind of physician in a single facility—all the orthopedic doctors, for example—clinics will house a range of disciplines. The number of physicians and the amount of space devoted to each department will vary according to the population of an area; a more elderly population would demand a different array of physicians than one that is younger and suburban.

Radiating from a core

These centers will be arranged around a core of services all patients tend to use—a pharmacy, a radiology suite, a check-in area, and one big waiting room.

Already the company is transforming its check-in and check-out procedures to meet this model. Currently, patients check in directly at the department where they will be seen—radiology or pediatrics, for example. The problem is that each of these departments must then maintain separate databases. "If you're going to two different departments, you have to check in twice. And both departments need waiting rooms, which eat up a lot of space," Bowditch explains.



The solution is to create a single check-in area as part of a spacious waiting room. Doing so not only centralizes the staff and the computer system, it gives the patients a degree of privacy—they can't look at one another and know what department they're visiting. The waiting room is also plush, comfortable, and noninstitutional in appearance—far from the orange vinyl furniture, blaring television, and posters depicting the warning signs of various diseases that characterize most medical center waiting rooms.

However, patients still check out at individual departments. "This requires confidential space, a place to order medications or talk about more personal subjects, such as referrals and future appointments," Bowditch says.

Personalizing service

Nearby is a small, comfortable office area where patients can meet with their physician or nurse-practitioner to ask questions, leaf through a pamphlet together, or, perhaps, watch a video. Creating such a room is part of another trend that seems in direct opposition to the push for greater technology: personalizing medical services.

In the future, patients will be smarter than ever about medical procedures and, therefore, stronger decision makers. As a result, personal interaction between patient and doctor will be critically important and the design of health-care facilities will have to accommodate more one-on-one contact and consultations. *Wendy Talarico*

"What you're seeing is a rationalization of facilities," explains Arnold Milstein, the head of the clinical consulting practice of William M. Mercer, a large employee-benefits consulting firm in San Francisco. This means that some hospitals have closed, while others have merged with their one-time competitors. Duplicate services in the same area are being squeezed out. "Health care is moving from being a cottage industry to being a competitive, customer-service industry," says Milstein.

While a typical health-care client in the past was a hospital executive who might be involved in just one large construction project in an entire career, today's client is often someone who oversees dozens of construction jobs a year and is often trained as an architect. "It's a more sophisticated, knowledgeable client today," states Milstein. "The bar has been raised significantly."

With the reduction in the number of beds and the growing emphasis on outpatient care, hospitals are getting smaller. "And we're seeing a tremendous focus on rethinking the mix of services provided at the hospital," says Milstein. Essentially, hospitals are reinventing themselves to serve fewer patients, who are more acutely ill and require a higher level of care. In many cases, major renovation work is needed to transform large, old hospitals into new, streamlined health-care centers. In some cases, hospitals are learning that it is better to start from scratch, building replacement facilities designed especially for the new approaches to health-care delivery and reimbursement. "If the chassis was designed for a different set of needs, it doesn't always make sense to pour new dollars into an old car," explains Quorum's Panther.

While the new networks and chains are closing some hospitals, they are converting others to provide different kinds of care in each facility. For example, after the merger of three local hospitals, the Citrus Valley Health Center in California is focusing each of them on different "centers of excellence," such as a state-of-the-art obstetrics center or cardiology department, reports Michael F. Ross, managing director of SMP/SHG Architects in Los Angeles, whose firm is designing a new $23 million birthing center for the hospital. Another strategy is to offer different levels of care at each hospital within the same region.

MUCH OF THE CHANGE IN HEALTH CARE IS BEING DRIVEN BY TECHNOLOGY.

After several years of fast growth, some of the large hospital chains such as Columbia/HCA are confronting serious problems managing their sprawling operations. "One thing Columbia has learned is that all health care, like all politics, is local," states the American Hospital Association's Wade. "I think you'll continue to see hospitals come together in networks, but they'll have a local or regional focus to their operations." The challenge for architects working for these chains will be to give each facility a local identity without losing the cost advantages that come from chainwide standards.

New types of clients are emerging

Hospitals aren't the only players hoping there is strength in numbers. As a way of gaining clout in negotiating with HMOs and hospitals, physicians are flocking to large group practices. And with the emphasis on ambulatory care and new technologies that allow more procedures to be done in a doctor's office, these group practices are taking business away from hospitals. "A lot more care is taking place in physicians' offices," states Milstein. The implications for architects are that the medical office of the near future will have to accommodate a broader array of procedures and large medical practices may be an increasingly important type of client.

DISEASE-FOCUSED CARE PROVIDER

Total Renal Care

Specialize and grow is the strategy Total Renal Care (TRC) has taken since it became an independent company in 1994. It seems to be working. From 37 kidney dialysis centers in 1994, the company expanded to 203 units by the beginning of 1998. In February of this year TRC was about to merge with one of its major competitors, Renal Treatment Centers (RTC), which would bring the combined company's total number of dialysis centers to 389.

"We are a high-growth company, very entrepreneurial," explains Lois Mills, vice president of operations for TRC's western division. A publicly traded company, TRC will have net revenues of $800 million once it merges with RTC.

Higher quality, lower costs

By focusing on one chronic disease, companies such as TRC are able to provide high-quality care at lower costs, says Wendy Everett, director of the Institute for the Future, a think tank that reports on health-care trends, emerging technologies, and international business topics. Often called disease-management companies, such health-care providers develop specialized systems for disease management, then replicate them, explains Everett.

Total Renal Care provides dialysis treatment and ancillary services in mostly freestanding outpatient clinics but also offers acute care in some hospitals as well as dialysis treatment at some patients' homes. The company also provides pharmacy services and pre- and post-transplant services, and has a renal research group. Although TRC does not offer complete disease management yet, the company is moving in that direction, says Mills.

In terms of growth, the company tries to cluster its facilities in geographic markets by opening new clinics, acquiring existing ones, and establishing alliances with hospitals. After its merger with Renal Treatment Centers, TRC will have dialysis centers in 32 states, as well as Washington, D.C., Guam, Puerto Rico, Argentina, and Italy. The company's goal is to keep expanding both in the United States and abroad.

Putting the patient at ease

A typical TRC dialysis center is between 5,000 and 8,000 square feet and includes between 15 and 25 treatment stations. Patients spend three to four hours there three times a week getting treatment, so creating an attractive, comfortable environment is important. Windows, plants, aquariums, and murals are all used by the company to create relaxing patient-care areas, says Mills.

A new dialysis center under construction in Redding, California, will have a library and computers that patients can use in researching their condition and learning more about kidney disease.

Design challenges

One of the challenges facing architects designing TRC facilities is that many clinics occupy leased spaces not specifically built for medical care, notes Mills. Architects often must address problems like providing daylight and establishing a sense of spaciousness in places with low ceilings and few windows. "The idea is to create the best possible setting for treating the patient," she says.

As for the future, Mills says, "We have to keep our entrepreneurial spirit while providing the best care." At the same time, she admits, the pressure to contain costs will remain constant. *C.P.*

HOSPITAL NETWORK

Intermountain Health Care

The Wasatch Front, the western slopes of the Wasatch Mountains, which stretch between Provo and Ogden, Utah, is in the midst of a population explosion. A dry climate, impressive scenery, and an expanding economy are strong magnets for growth. But on the east side of the mountains, it gets rural fast: there's plenty of sagebrush but few people.

Maintaining quality and service among small rural clinics and big urban centers, though, is one of the accomplishments of Intermountain Health Care, a nonprofit provider serving Utah and parts of Idaho and Wyoming.

Intermountain has 23 hospitals and about 100 clinics. Facilities range from part-time, single-physician clinics, set up in a back room at the fire department or the school nurse's office, to the 650-room LDS Hospital in Salt Lake City.

Standardizing procedures

Part of Intermountain's success lies in timed, standardized treatments for many ailments, states Mike Falck, a regional vice president. These standards are contained in the company's sophisticated computer network, which, by the end of this year, will link all the company's facilities so that every patient's records can be accessed at any of the company's clinics.

Intermountain is also developing a strategy to integrate all the professions involved in caring for patients, from the physicians, nurses, and technicians to the people in the accounts-payable office. "If we're all on the same team, we can work together instead of pulling in different directions," Falck says.

To accommodate this approach, facilities will be organized according to clinical processes—cardiovascular, gastrointestinal, or musculoskeletal, says Stephen Dibble, AIA, manager of facility development.

The $60 million Utah Valley Women's and Children's Center, now under construction, is a good example. Clinical operations that focus on women (mammography, labs, and examinations) are on the first floor, while the second floor is for labor and delivery, and upper floors are for pediatrics and neonatal care.

The success of this paradigm will affect future construction. Within the next six years, Dibble will spend a big portion of the $5 billion budgeted for construction, technology, and equipment. In the works are three hospitals (all replacements of existing facilities) and numerous primary- and secondary-care centers and clinics.



Design strategy

Intermountain's buildings, like the care the company provides, are standardized. The atrium-like waiting areas are spacious enough for patients to establish a comfortable distance from others. All of the interior finishes and furnishings are similar in color and style so items can be moved around without trouble.

Secondary-care clinics are built in pods that accommodate six physicians and a shared waiting area. When a center gets too crowded, another pod is added.

Local hospitals in rural areas are designed for flexibility. "We needed to find a way to scale back and still offer the same amenities as a big hospital. We had to be ready for that one birth every three or four weeks or the occasional car accident," Dibble says. Patients' rooms can be converted into an intensive-care unit, while the emergency room can double as an operating room.

Someday, Falck predicts, technicians will be able to hook up sensors to and focus a camera on patients so physicians can diagnose them from a remote location. Until then, Intermountain will accommodate its vastly different populations with innovative buildings and a strong reliance on technology. *W.T.*

RESEARCH AND FORECASTING FIRM

Institute for the Future

With so much change happening so quickly, forecasting the future of health care has never been more difficult—nor more important. But Wendy Everett, director of the health-care programs at the Institute for the Future (IFTF) seems undaunted. Indeed, she recently completed the 156-page report "Piecing Together the Puzzle: The Future of Health and Health Care in America."

The report covers everything from health-care costs to changes in the delivery of care, the supply of medical professionals, emerging medical and information technologies, and the consumers of health care. It includes 12-year forecasts of supply, demand, and costs in the industry and wraps up with three different long-term scenarios of the future.

The forecast generally shows expansion, with the IFTF predicting 6.4 percent annual growth in health-care expenditures, "equivalent to just under 1 percent more than monetary GDP growth." In this regard, the institute predicts the next seven to 12 years will resemble the moderate-growth period of the last five years more than the inflationary era of the 30 years before that.

Based in Menlo Park, California, on the northern edge of Silicon Valley, the IFTF is an independent, nonprofit research organization that tracks, analyzes, and forecasts data in the fields of health care, emerging technologies, and international business. It was founded in 1968 by scientists from the Rand Institute and started tracking health care in the mid-1980s.

Everett sees many factors shaping the future of health care. "Managed care will be an increasingly important part of the system," she predicts, and a better-educated population will be healthier. Another key factor for the future is the growing oversupply of physicians.

Perhaps the most important influence on the future, though, is the development of new medical and information technologies that will transform how and where medicine is practiced. Stay tuned. *C.P.*

Another emerging source of clients is the growing number of what are called disease-management companies, which offer specialized care. Perhaps the best known of these for-profit companies is Salick Health Care, which operates cancer centers around the country. By focusing on one kind of chronic disease or health condition, companies such as Salick have been able to provide a very high level of expert care while minimizing costs at the same time. Some of these companies have gone public with stock offerings and are pursuing aggressive growth strategies in the United States and abroad. "Wall Street has opened its eyes to the health-care industry, and all of a sudden there are companies out there that are able to raise a lot of money to spark growth," says Milstein.

"WE'RE SEEING A FOCUS ON RETHINKING THE MIX OF SERVICES THAT WILL BE PROVIDED AT THE HOSPITAL."

Some disease-management companies oversee treatment and run programs for HMOs or hospitals in existing facilities. For example, Clinical Partners, an AIDS-care company based in San Francisco, provides its services to Kaiser Permanente and has no facilities of its own. But Salick and a few other disease-management companies that have their own centers understand the importance of architecture in establishing a strong corporate identity and attracting customers. Indeed, Salick has hired the architecture firm Morphosis to design an extremely sophisticated cancer center and other structures.

Technology set to make sweeping changes

"Much of the change we're seeing in health care is being driven by technology," states Quorum's Panther, citing innovations in electronics and biological sciences. "Many hospitals are spending more on technology than on facilities," he adds.

On the electronic end, new digital technologies are making it easier for health-care companies to store and transmit all kinds of information—everything from X-rays to records. This is reducing the amount of space hospitals need for patient records and allowing doctors in different locations to examine the same information. As a result, these electronic developments are reinforcing the move to less expensive satellite facilities.

At the same time, advances in biotechnologies are radically changing the way many diseases and conditions are treated. New kinds of genetic testing are alerting patients to conditions they may develop in the future, less invasive surgery is reducing the length of hospitalization for many patients, and new drugs are eliminating the need for some kinds of surgery. "Advances in biotechnology will replace so many of the procedures that we've built our hospitals around," states Molly Joel Coye, vice president of the Lewin Group, a medical consulting firm. For example, a new polymer paste that is injected into bone fractures starts to replace bone within 24 hours, and within four weeks is almost indistinguishable from real bone. Such a development might revolutionize the field of orthopedics.

No matter what kind of health-care facilities architects are working on, clients are asking them to answer two questions, says Ruga of the Center for Health Design: how can you reduce our costs and how can you improve our customers' satisfaction? Architects who can show how their services address these questions will find themselves acting as key players in health care, along with HMOs, hospital networks, disease-management companies, and technology firms. ■

TECHNOLOGY COMPANY

OpTx Corporation

Health-care professionals are foundering in an ocean of information. All those medical journals, research papers, patient files, treatment protocols, and reimbursement forms can become a burden rather than the critical resources they were intended to be.

Enter OpTx Corporation. A Winnipeg-based company with about 80 employees, OpTx provides software and consulting services to health-care providers, insurers, managed-care companies, and research institutions dealing with catastrophic diseases such as cancer. What OpTx does is consolidate all the clinical information a company uses into a form that is electronically stored, easily accessible, and continually updated.

The impact on health-care facilities of such technology may well be quite dramatic, significantly reducing the amount of space needed for patient records and reinforcing the current trends toward smaller facilities and more decentralized health-care systems.

More dispersed facilities

By allowing more information to be shared simultaneously among different sites, the technology makes it possible for higher levels of care to be provided at more dispersed facilities.

For example, not only are patient records kept electronically and made easy to distribute to satellite facilities (such as a local clinic near the patient's home), but all of the guidelines and protocols for treating a patient's disease are accessible at the touch of a button—reminding the physician what each step in the treatment program should be.

If a doctor wants to check the latest research on the disease, he or she can pull it up on screen instead of running off to the library. "The science and knowledge of the disease" are made available to the physician, explains Patrick Jeffries, CEO of OpTx.

All patients' treatment histories and clinical outcomes are also recorded, so the companies that provide care and those that pay for it can see which treatment programs have the best results. The system even takes care of payment records, automatically updating billing forms at each step during treatment.

The OpTx technology was developed about 10 years ago by the accounting firm of Price Waterhouse, and in 1993 OpTx became a private company.

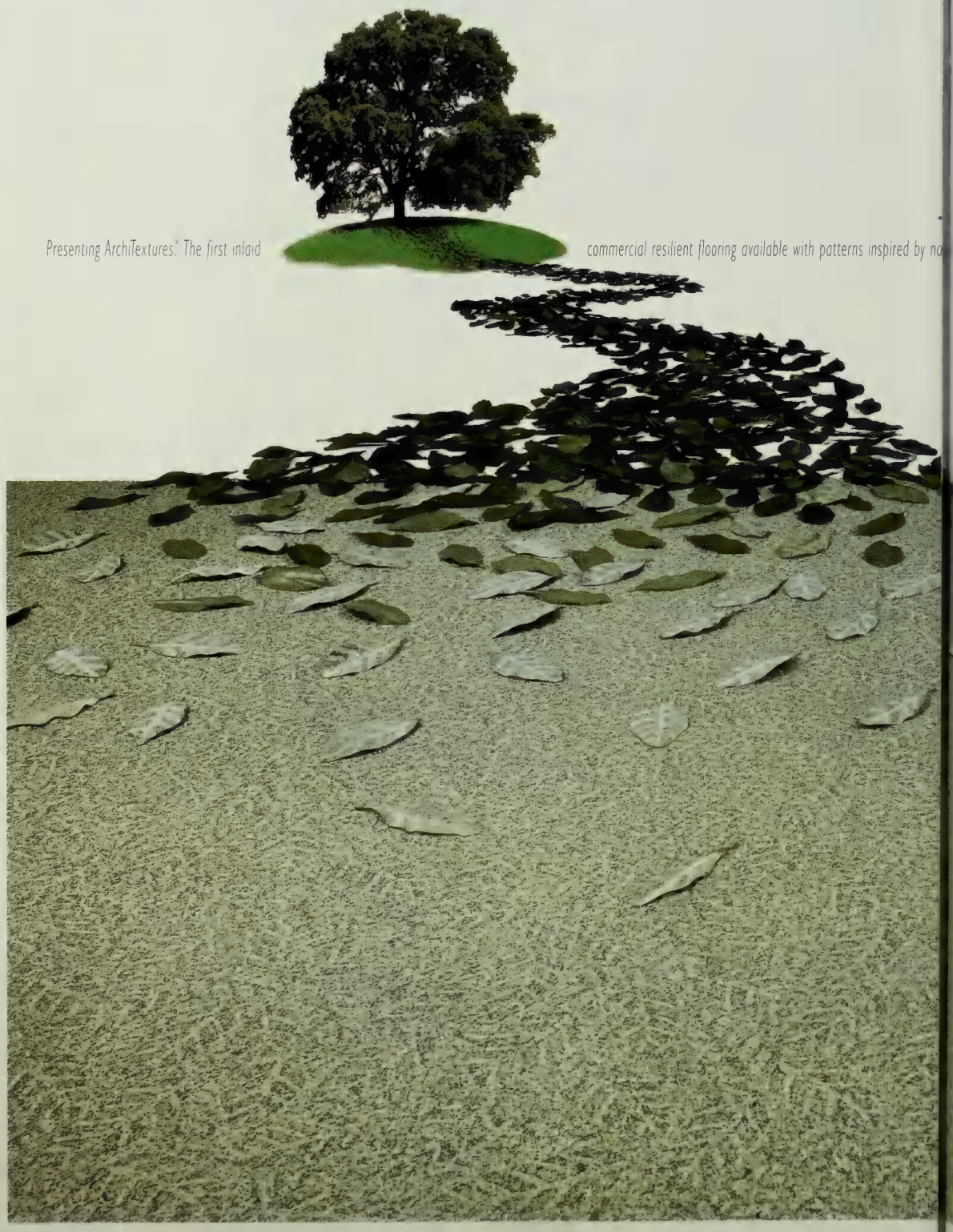
Focus on specialty care

OpTx began by focusing on cancer care but now has expanded to include other chronic and catastrophic diseases such as heart disease, diabetes, AIDS, and orthopedics. According to Jeffries, these five areas of care account for 30 to 40 percent of all expenditures on health care.

Jeffries likens the impact of his company's information technology on the health-care industry to that of the now-ubiquitous bar code on retailing. According to Jeffries, the bar code allowed stores to reduce their inventories, adopt sophisticated pricing strategies, and make decisions based on accurate information about exactly what products were selling. "Once this kind of information is available, it roars through a system, changing it forever," he says.

The OpTx technology might also change the responsibilities of doctors and nurses, relieving them of much paperwork and giving them more time to focus on patients.

In addition, it may result in more successful treatment programs due to better information made available to physicians and nurses. *C.P.*



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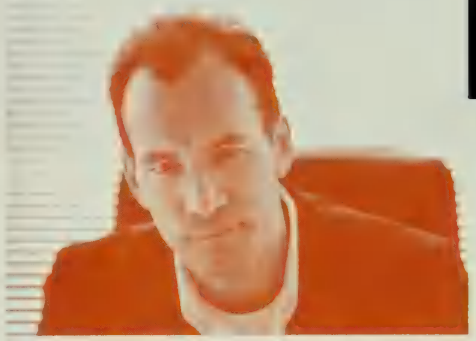
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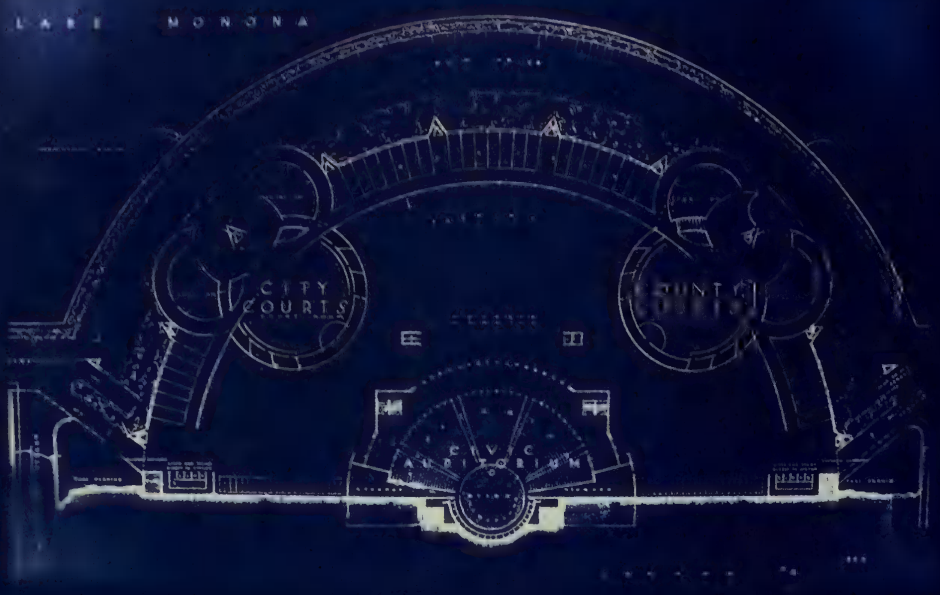
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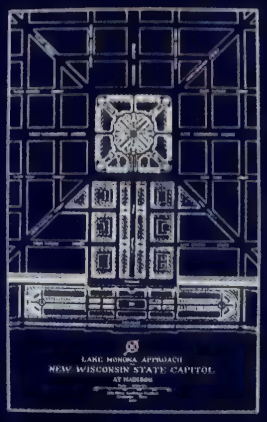
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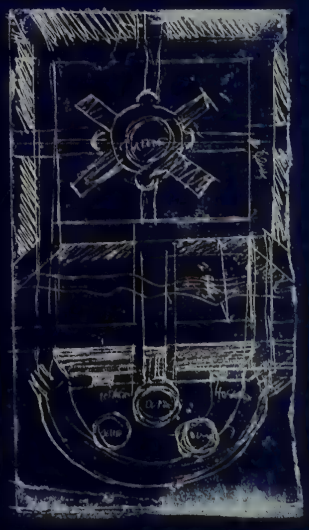
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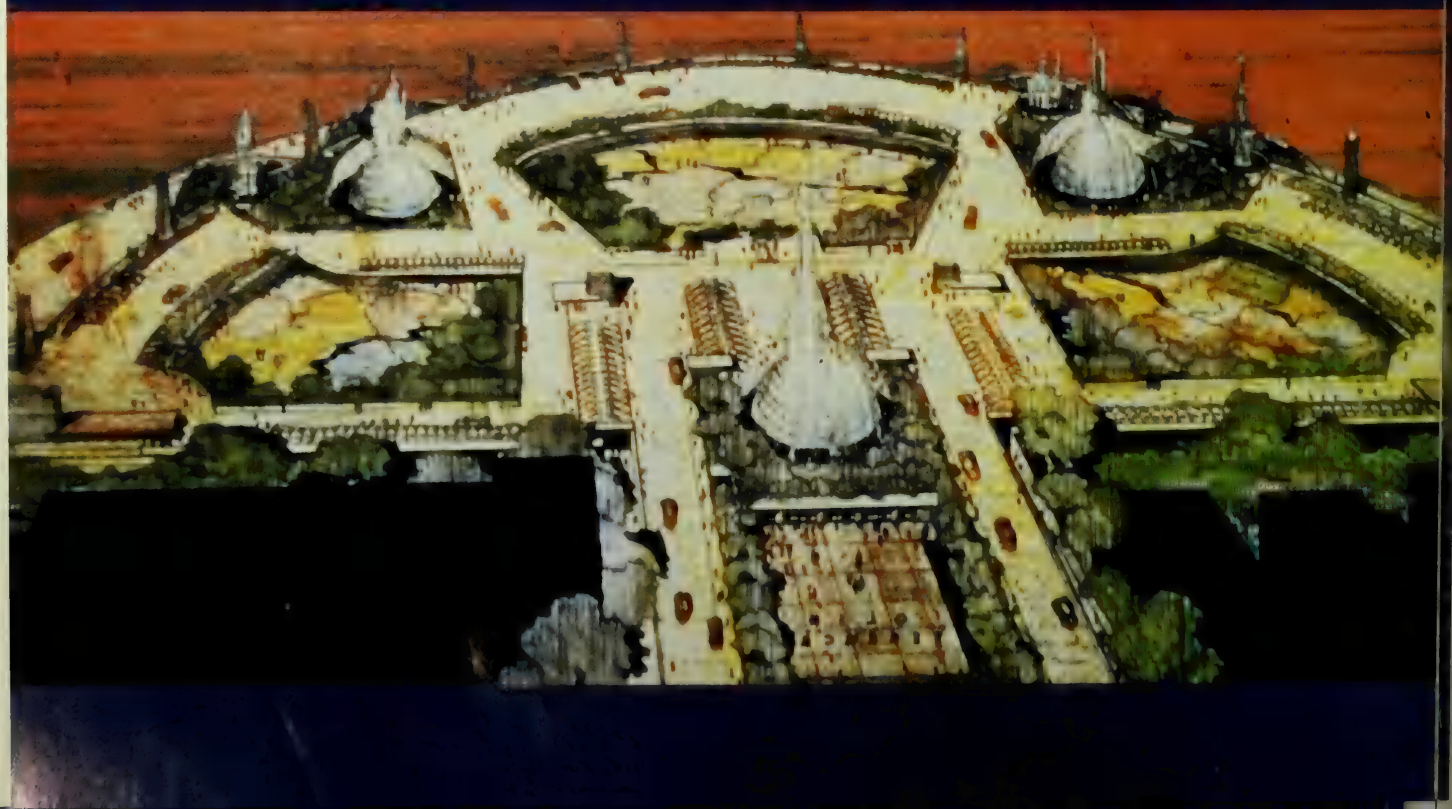






Wright's earliest sketches (right) took inspiration from the City Beautiful scheme uniting capitol and waterfront drawn by John Nolen (top right).

Wright's 1938 scheme is shown rendered below. Above is Terrace A, in which courts and a hemicycle of offices open to the encircling lakeside boulevard.



PROJECT DIARY One of Frank Lloyd Wright's great visions, MONONA TERRACE, is transformed and opens after 59 tumultuous years.



The Monona Terrace project had already gone through several iterations by the time this photo was taken in the late 1950s. Wright (center) is flanked by a member of the Terrace commission (left) and Ivan Nestingen, the mayor of Madison at the time.

by James S. Russell, AIA

When the Monona Terrace Conference and Convention Center opened last July 18, it was almost as if Frank Lloyd Wright had reached out from the grave, presenting us one last masterwork nearly 40 years after his death. And perhaps he had. The design of Monona Terrace has so long held the imagination of the citizens of Madison, Wisconsin, that they finally built it 59 years after Wright's first proposal. The history of Monona Terrace is an unusually tumultuous one, even by the operatic standards of Wright's life. For all the stories architects can tell about battles and delays, few can top the Monona experience. The project history that follows (up to 1960) is greatly indebted to research done by Mary Jane Hamilton and David V. Mollenhoff, whose book, Frank Lloyd Wright's Monona Terrace: The Enduring Power of a Civic Vision, *will be published later this year by the University of Wisconsin Press. David Dillon offers criticism, beginning on page 94.*

1938 Madison's unusually beautiful setting has always attracted Frank Lloyd Wright, a native son, who spends much of his life in Spring Green, Wisconsin, only an hour away. Madison stretches along an isthmus that separates Lake Monona from Lake Mendota with the state capitol presiding from a high point. Officials of the City of Madison and Dane County plan a consolidated structure to house offices and courts. Paul F. Harloff, a civic leader, concludes that the proposed site, in the central business district near the capitol, is a poor choice. He and a group of other citizens ask Wright to design what they hope will be a genuine civic adornment: a lakefront city and county building culminating an elegant three-block-long boulevard, Monona Avenue, that leads from the state capitol.

Wright is not the first to recognize the site's potential, but its promise has proved difficult to realize. Monona Avenue ends ignominiously at the top of a 60-foot-high bluff. Reaching the lake means bridging a moat of railroad tracks. In 1910 John Nolen, a prominent landscape architect and city planner, had designed a City Beautiful–style landscaped mall linking the capitol with a formal garden terrace at lakeside (opposite, top right), only a small fragment of which was built.

Wright begins to sketch a much grander vision, drawing the streets from the capitol quadrangle across the tracks and opening them out onto a grand hemicycle of gardens and fountains that step in a graceful tier down toward the water's edge. The size and location of the fountains echoes the domes of the capitol, knitting capitol and esplanade together into a single, urban-scaled composition (opposite, bottom right). The architect rewrites the Beaux Arts rules, however, proposing domes of glass, not stone, and topping them with water jets so the interior spaces below would be constantly dappled with water-filtered light.

For what he dubs Olin Terraces (a name already associated with the place), Wright carves large openings and a grand stair in the top esplanade to expose gardens one level below. Called Terrace 2, this level is the uppermost of three levels of separate county and city functions tucked below the esplanade. He places a hemispheric civic auditorium

Project: *Monona Terrace Community and Convention Center, Madison, Wisconsin*
Owner: *City of Madison*
Architect: *Monona Terrace Design Venture—Anthony Puttnam, principal-in-charge; R. Nicholas Loope, AIA, Peter Rott, Denise Weiland, William Mims, Sarah Robinson, Charles Montooth, James Booth, Philip Weddle, Jay Jensen, Jon Keiser, Don Larry, Jack Peterson, AIA, Elizabeth Rosensteel, Barry Petersen, Richard Hofmeister, Michael Standish, Dan Watson, Gustad Irani, Ivan Shongov, Chris Bernotes (Taliesin Architects); David Lawson, AIA, principal managing partner; Warren Bauer, AIA, David Engelke, AIA, Mike Clark, AIA, Paul Wagner, AIA, Bill Gray, AIA, Tim Usher, AIA, Karl Kraemer, Kim Smith Spoden, AIA, Lois Braun-Odde, Mark Mattes, AIA, Jan David Horsfall, AIA, Jim Horavec, AIA, Peter Crennel, AIA, Jim Sines, AIA (Potter Lawson Architects)*
Engineers: *Arnold and O'Sheridan (structural, mechanical, HVAC, plumbing, electrical—also part of the joint venture)*
Consultants: *Convention Center Design Consultants (center layout); PHA Lighting Design (lighting); SRI (roofing and waterproofing)*
Construction Manager: *Findorff*

under the largest, central dome and the courtrooms on two levels in interlocking curved forms under the lakefront domes (page 88, left). An enormous ring of offices at the lakeside edge of the hemicycle offers either water or garden views. The courtrooms can be entered at the lowest and broadest terrace, where Wright plans an encircling boulevard linked to a future lakefront parkway. Ramps connect the boulevard to the streets that lead to the capitol (rendering, page 88).

Without being asked to, Wright places a train station at the rail level, one level below the boulevard. Waiting travelers are offered a Piranesian water view through the gigantic triangular piers that rise out of the lake and support the cantilevered lowest deck of the project. Wright calls these piers ice-breakers—a romantic conception of the forces of nature in this northern location. Situated between two pairs of the ice-breakers are circular jails, accessed by stairs within the mighty piers. Wright also locates boathouses and moorages under the lowest terrace.

Though Wright is 71 years old, an age when most people would at least consider retirement, his career appears poised to hit heights not seen since the prairie period of the early 1900s. With the completion just one year earlier of Fallingwater and construction in full swing on the much-anticipated Johnson Wax headquarters, Wright has triumphantly emerged from the critical wilderness. The economy is rising from the depths of the Great Depression, and he might have hoped that Olin Terraces would be his first completed urban-scale masterpiece.

As breathtaking as this conception is, however, Wright is already playing catch-up. By the time he unveils his scheme, the officially sanctioned design for the city-county building, by the Madison firm Starck, Sheldon and Schneider, has been endorsed by government officials and citizens in a referendum to approve a sale of bonds. Wright does not help his cause by deriding the George B. Post capitol building as "neither gentlemanly nor scholarly" and calling Madison a "highbrowed community of provincials." Still, he sufficiently impresses the Dane County Board that it decides by a one-vote margin to postpone issuing the bonds for the endorsed design. Wright's alternative reignites a smoldering power struggle between the county board and the Madison Common Council. The Starck, Sheldon and Schneider project does not proceed, but neither does Wright's. Federal funding is withdrawn, for which some blame Wright. Wright continues to lobby for the proposal, but to no avail.

1941 The City of Madison proposes to build a large civic auditorium and engages architect Ferdinand Kronenberg to devise preliminary designs. Wright sees an opportunity to revive Olin Terraces, since it already contains such an auditorium and the need for city and county facilities remains. Making minor changes to his earlier scheme, he submits the proposal. It is endorsed by the *Wisconsin State Journal* and prominent local figures but is shelved because of World War II.

1953-59 After the war, the project for a combined city and county building is revived. Wright's earlier proposal is not even considered. The commission goes to the Chicago firm of Holabird, Root & Burgee. The civic auditorium project is also revived, Wright galvanizes considerable citizen support, and the next year voters narrowly approve $4 million in bonds, affirm the Monona Avenue site, and approve Wright as the architect.

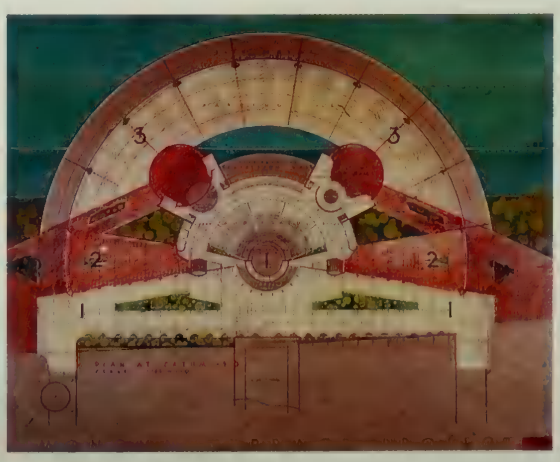
In early 1955 Wright presents the revised scheme, by now rechristened Monona Terrace. The three domes remain, and Wright places an exhibition hall, an art gallery, a little theater, and a dance hall under two of them. A much smaller lounge takes the place of the grand ring of offices linking the circular elements below the esplanade. The main auditorium remains central. The lakefront boulevard also remains, but much of the lower two decks of the project becomes parking. The scheme retains the railroad station and boathouses.

A WRIGHT ENEMY ATTEMPTS TO ENLIST ANTI-COMMUNISTS AND THE FBI TO BRAND THE ARCHITECT AS UN-AMERICAN.

The political fissures opened by Wright's first scheme have intensified over the years. The project has attracted zealous followers since its inception. (One fan circled the capitol in his car, using a a rooftop-mounted sign and a megaphone to rally support for the project.) Wright himself attracts a virulent form of opposition. His enemies see him as the embodiment of artistic and moral degeneracy because of his messy amorous liaisons, his handling of money (his personal profligacy in the face of unpaid debts turned creditors into enemies), his presumably left-leaning politics, and his projects' tendency to come in wildly over budget.

Opponents prevent awarding a design contract to Wright. They convince the state attorney general to question the constitutionality of the design as an impairment of the public's right to use the lake. The dispute gets as far as the state supreme court before its constitutionality is affirmed. The city finally makes a contract with Wright in 1956 but asks for





The view from the lake side (above) was made in 1953 but reflects the tiered 1938 concept. A rendering (opposite top) and floor plan (right), both from 1955, reflect alterations made by Wright to accommodate a civic auditorium and other functions.



further changes. Wright begins scaling back what he once called "a great civic expression." The building area permitted to cover the lake is greatly reduced, the two lower decks and the ice-breaker pylons are eliminated, and the shore drive is rerouted through rather than around the structure. The train station is removed, making room for a community center.

Opponents lobby the legislature for what is called the Metzner Bill, which would prohibit any structure taller than 20 feet on the isthmus side of Lake Monona. Its passage would kill Wright's scheme. After rancorous debate, the bill passes in 1957, but the outrage it inspires contributes to the political downfall of its proponents.

One of Wright's opponents, Joseph Jackson, has long been compiling what he dubs the Wright Record, in which he depicts Wright as a nonconformist, portraying him as un-American in his activities and affiliations. In this Cold War era, Jackson seeks the assistance of Wisconsin's notorious communist witch-hunter, U.S. Senator Joseph R. McCarthy, and inspires an investigation by the FBI. Though a file remains on Wright, no charges come out of it; nor does McCarthy pursue any public castigation of Wright. The Metzner Bill is repealed in 1959. One month later, in April 1959, Wright dies at 91.

Though he had done a great deal of work in his last two decades, none of Wright's great landscape visions (urban or rural) had been realized in his lifetime. His chief late-life accomplishment, the Solomon R. Guggenheim Museum, in New York City, is completed after his death.

1960-90 William Wesley Peters becomes the architect in charge of Monona Terrace, and the newly formed Taliesin Associated Architects, Wright's successor firm, embarks on further modifications and reductions in scale. Bids for the revised project come in at $12 million, far above the $5.5 million that had been approved. A referendum on whether to proceed with the project is placed on the ballot, and the project is rejected, this time, it would seem, for good. Taliesin must go to to court to collect outstanding fees.

In the late 1960s Taliesin is commissioned to master plan the development of the entire western shoreline of Lake Monona. The Monona Basin Project (page 93) integrates Wright's Monona Terrace project into a system of parks and buildings proposed for three miles of lakefront. The city asks Taliesin Architects (the name had changed over

the years) to design the first phase of the master plan, a 2,500-seat performing arts center. Bids come in well over budget, and a new mayor halts the project. The entire Basin project is abandoned in the 1970s after yet another referendum. The civic auditorium idea finally comes to fruition in 1980 with the conversion of a movie theater and former Montgomery Ward store into an auditorium and art center by New York City architects Hardy Holzman Pfeiffer Associates.

1990-94 In preceding years the city has solicited proposals and debated the merits of a convention center, but the efforts are turned back at the polls. Having all but given up on the idea, Mayor Paul Soglin finds himself separately approached by a powerful alderman, a local developer, a prominent engineer, and the city's tourism director, each of whom urge him to consider whether Wright's scheme can be adapted to make the convention center more appealing to voters.

"What excited me was that all these folks with their different views and interests were supportive," says Soglin. "All of them saw great possibilities in the Wright design." The mayor contacts Taliesin Architects, who, under the leadership of Anthony Puttnam (who was only 19 when he worked with Wright on Monona Terrace), conclude that the design can be adapted.

The revived project is still controversial. A group dubbed It Ain't Wright assails the cost, the need for the project, its environmental impact, and whether it legitimately can be considered a Wright design. In 1992, however, voters approved the project. Over the three ensuing years financing is assembled with contributions from the city, state, county, and individual and corporate donors. The Monona Terrace Design Venture is formed, uniting Taliesin, which has overall design responsibility for architecture and interiors, with Potter Lawson Architects, responsible for detailed documentation of the exterior envelope, code compliance, project team coordination, and construction administration. The team includes Arnold and O'Sheridan Engineers, which handles the civil, structural, HVAC, electrical, and plumbing engineering for the project.

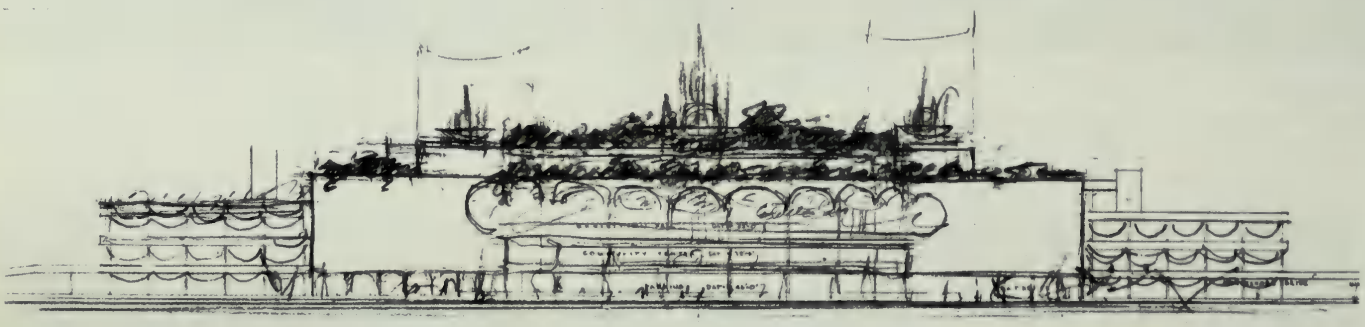
1994-96 With such a dramatic change in program, the question is which of Wright's ideas can be kept as the design is revised. "What we're doing now is Monona Terrace eight," says Puttnam, Taliesin's principal-in-charge for the project. The convention center cannot spread out horizontally over the lake in the way Wright first proposed. Taliesin digs out versions of the design Wright had sketched before he died in which he had begun to rework the project without the broad lower tier and lakefront drive. One of these (below) becomes the basis of the elevations the joint venture develops. In plan, the broad curve generated by the semicircular auditorium seen in 1956 drawings and its

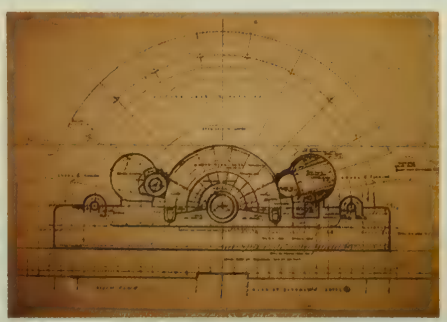
"WHAT WE'RE DOING NOW IS MONONA TERRACE EIGHT," SAYS TALIESIN'S ANTHONY PUTTNAM.

two satellite domed shapes form the external envelope within which the new program is packaged.

However, none of the geometry of overlapping, interlocking curved forms that was characteristic of Wright's late work survives in the interior development—the needs of the 250,000-square-foot convention center prove too complex (see plans, pages 99 and 101). The central auditorium is squared off for an exhibition hall, and the satellite curved forms facing the lake now house mainly orthogonally organized services. While most internal spaces in Wright's earlier schemes offered either garden or lake views, only three public rooms—the Lakeside Commons at grade, a community room above it, and the Grand Terrace at the fourth level—open onto the water.

The framing is changed from concrete to steel for easier and more economical erection. The higher floor-to-floor heights demanded by the program push the volume of the building a full floor above the elevation of Martin Luther King, Jr., Boulevard (the new name for Monona Avenue). This is not unprecedented. Wright had recognized in the auditorium schemes that the stage house would project above street level, blocking the vista down the avenue, but he apparently never resolved the





Wright's design for a project without the broad lowest tier and lakeside avenue in 1956–57 includes a plan (left), the envelope of which Taliesin took as a starting point in the 1990s. Above and right, two contemporary studies.





problem. Taliesin develops a ramp system to move pedestrians up to a planted rooftop terrace (pages 98–99), which takes the place of the esplanade envisioned by Wright. From the lakefront, a measure of the horizontality Wright earlier achieved is recovered by extending parking ramps along the lake on each side (pages 94–95). A narrow bike path circles the building's lake elevation, instead of the grand, landscaped boulevard once dreamed of.



The Monona Basin Project in the 1960s included a further revised Monona Terrace (above) as part of a three-mile-long lakeside park system.

1997 Touted as "a public place by Frank Lloyd Wright," and costing $67.1 million, Monona Terrace opens on July 18. The realization of a major project by the key American architectural figure of the century 38 years after his death attracts attention in print and broadcast media nationwide. The Wright connection is key to the marketing of the center in a city not heretofore known as a convention destination, and promotional material advertises it as a "Frank Lloyd Wright design."

The Wright connection is a boon to Madison, a city that had spurned its native son so often while he lived. The attention helps bookings, say officials, and boosts fund-raising to complete such unfinished elements of the scheme as a terrace fountain. "We have not just conventioneers, but people coming from around the world as tourists to see the center," says director Joan LeMahieu.

Given that so little of what was envisioned as a spectacular public amenity has survived in built form, are the designers and owners hiding behind the imprimatur Wright's fame has conferred? Such questions of authorship have a long tradition in architectural history, say scholars. The question also would have a simpler answer if Wright himself had not so dramatically and frequently altered the scheme. "Who was the consummate remodeler? Frank Lloyd Wright," claims David V. Molinoff, after long study of the project. "What was inside the building was not as important in Wright's mind as the overall statement."

In claiming that the center is "designed by Frank Lloyd Wright," its owners are, strictly speaking, inaccurate. Puttnam says officially it is "a design based on" that developed by Wright, though he says Monona Terrace is "certainly predominantly a Wright design." Two Wright scholars, Neil Levine, who teaches at Harvard University's Graduate School of Design, and David De Long, a professor of architecture at the University of Pennsylvania, say history will record it as "based on" or "inspired by" Wright.

Does it matter that even to the little-trained eye this Monona Terrace does not look much like what Wright struggled more than 20 years to achieve? "My original take on Wright's design was that it was not a building," comments Levine, who says the design's greatness lies in its prescience: "In today's way of thinking, we'd almost regard it as a site-specific sculpture. As it's built, it's much more a building." De Long lauds construction of the project, even if it's only a "version" of what Wright hoped for.

MADISON AND WRIGHT KEPT COMING BACK TO EACH OTHER BECAUSE EACH HOPED THAT A KIND OF TRANSCENDENT GREATNESS COULD BE ACHIEVED.

Had any of Wright's earliest schemes been built, they would perhaps be judged as aesthetic masterpieces and functional failures. The fountains over glass domes and the multiple levels of elevated gardens would surely have proven enormously difficult to construct and maintain. The acoustics and sight lines of the auditoriums would be found wanting today. And the courts would be seen as inadequate and insufficiently flexible. On the other hand, Wright himself was never able to *(text continues)*

Is this Monona Terrace really Wright?

by David Dillon

Monona Terrace was Frank Lloyd Wright's way of knitting together a fragmented city. As his broad boulevard sloped down from the capitol on the hill, it would open onto a plaza that spanned a tangle of highways and railroad tracks, then descend and radiate in graceful circles out from the shores of Lake Monona. This "plaza" was to be part garden and part parking deck, beneath which would sit a city-county office building with a jail, courts, and its own railroad station. In one grand stroke he would reconnect community, government, and landscape and write "finis" to planner John Nolen's 1910 scheme for a capitol mall.

But Monona Terrace turned out to be one of Wright's most divisive projects. The building that finally opened in July 1997, 38 years after his death, isn't the megastructure Wright planned but instead a 250,000-square-foot convention center with five levels of exhibit halls and meeting rooms, bracketed by helical ramps leading to a 560-car parking garage. The basic curvilinear form is Wright's, but most of the interior spaces are new, as is the whole idea of a convention center, which dates only from the early 1990s.

So if the first question we ask of any building is how well it fulfills its designated purpose, of Monona Terrace we must also ask whether it expresses Wright's unique architectural and urban vision. Is it ultimately his building or merely an earnest approximation by his associates?

As urban design, Monona Terrace works reasonably well. From the state capitol, Martin Luther King, Jr., Boulevard (once Monona Avenue) flows two blocks to a small urban plaza, Olin Terrace, which merges with a footbridge leading to Monona Terrace. While not the grand ceremonial approach that Wright proposed, the bridge makes a reasonably smooth transition from street to structure. The architecture of the capitol is recalled in a streamlined classicism of circles, columns, domes, and arches, while Monona Terrace's central promenade is on axis with Martin Luther King, Jr., Boulevard and the capitol.

For all its exotic geometry, Monona Terrace is a rigorously symmetrical building, though an unusual upside-down, inside-out one. Visitors enter at the top, then walk down to the lobby and the principal meeting rooms, which are clustered in the "rear" of the building, overlooking the lake, instead of inside the front door. Three main public rooms bow out over Lake Monona—though not the full 650 feet that Wright intended—to give visitors a sense of connection to nature. A trail for hiking and cycling runs along the base of the building, an attenuated version of the parkway in Wright's later schemes. Yet considering how

Contributing editor David Dillon is the architecture critic for the Dallas Morning News. *He wrote about the Georgia O'Keeffe Museum in* RECORD's *January 1998 issue.*









VICINITY PLAN

1. *Convention center*
2. *Parking ramp*
3. *State capitol*

The lake view of the project (above) and a final design rendering (below) show the relationship of the center to the capitol. Parking ramps stretch to either side on the land side of the center. The glass domes Wright intended to echo the capitol's dome have been replaced by cast-in-place concrete drums. A bike path (opposite) replaces the landscaped boulevard that Wright envisioned.





The plaza atop the center recalls the esplanade Wright first sketched (this page). Seen from along the lake, the center lacks the broad, horizontal extension Wright once hoped for (opposite).

dumb and claustrophobic convention center spaces usually are, these terraces are pleasantly open and transparent.

Far less inspiring are the lower-level views back to the city. Here the principal vistas are of parking ramps and concrete retaining walls slammed up against a cliff. And the highway and railroad tunnel is grimness itself, with none of the spatial or visual generosity of Wright's original scheme.

Since opening last July, Monona Terrace has hosted nearly 500 events, including 28 small conventions and an assortment of academic symposia, bar mitzvahs, and high school proms. The rooftop garden has become a popular spot for brown-bag lunches as well as a setting for concerts and other public events. Since Wright always considered Monona Terrace a community building, this potpourri of uses is entirely suitable.

On the other hand, much of Monona Terrace's initial popularity derives from its being marketed as a Frank Lloyd Wright building. "A Public Space by Frank Lloyd Wright," says the promotional literature. It's become the showpiece of local architectural tours and the mainstay of the burgeoning Wright industry. Its gift shop is stocked with Wright ties, coasters, books, and postcards.

"There's no question that being a Frank Lloyd Wright building gives us an edge for small conventions," says director Joan LeMahieu. "We're a convention center and a tourist destination. We have been singled out as pointing the way to the future because we're not just a box with docks. We've incorporated the natural surroundings into our design."

The problem with all of this, of course, is that even though Wright revised the design of Monona Terrace at least four times, he was not involved with the version that finally got built. The idea of turning it into a convention center surfaced only in 1990, after a public referendum on a new convention center on a different site had failed. Wright's successor firm, Taliesin Architects, then persuaded city officials that Monona Terrace could be adapted for such purposes.

As far as project architect Anthony Puttnam is concerned, this is entirely consistent with the history of the Monona Terrace project. "We have a building that is within one foot of accuracy of his 1958 design," he explains. "We look so much like that design I don't know who could say we aren't a Frank Lloyd Wright design. Ninety-eight percent of people are not going to be concerned if a detail is by Wright or by one of his students. It wouldn't be here, in this place, if it hadn't been for Frank Lloyd Wright."

As for the dramatic shift in use, Puttnam points out that Wright himself constantly changed what went on in the building. "He wasn't stuck on what was in it. What mattered to him was what the building did for the city. It carried forth another vision of Madison."

The missing element in this equation is Wright himself. The ongoing give and take between architect and client that shapes most buildings, and that might have made this one sing, never took place. Wright left only a few sketches and finish schedules for the interiors, which Taliesin Architects had to flesh out as best it could. The basic color scheme—red, cream, and terra-cotta—belongs to the period of the Guggenheim and the Marin County Civic Center, but it doesn't have the delicate touch, the tactile richness we expect from Wright. The detailing is frequently fat-fingered and occasionally cheap, as in the acoustical-plaster ceilings in the ballrooms. Away from the grand terraces, with their sweeping views of the lake, the rooms feel low and cramped.

So instead of a "Wright building" we should speak of a building "inspired by Wright" or "in the style of Wright." He provided the broad outline that others have filled in, the synopsis for a novel ultimately written by others.

Predictably, Madisonians continue to debate the merits of Monona Terrace, some calling it a civic treasure and the key to a downtown revival, others dismissing it as a "Wright elephant" and shuddering at what it may cost to maintain it.

THE MISSING ELEMENT IN THIS EQUATION IS WRIGHT HIMSELF. THE ONGOING GIVE AND TAKE THAT MIGHT HAVE MADE THIS BUILDING SING NEVER TOOK PLACE.

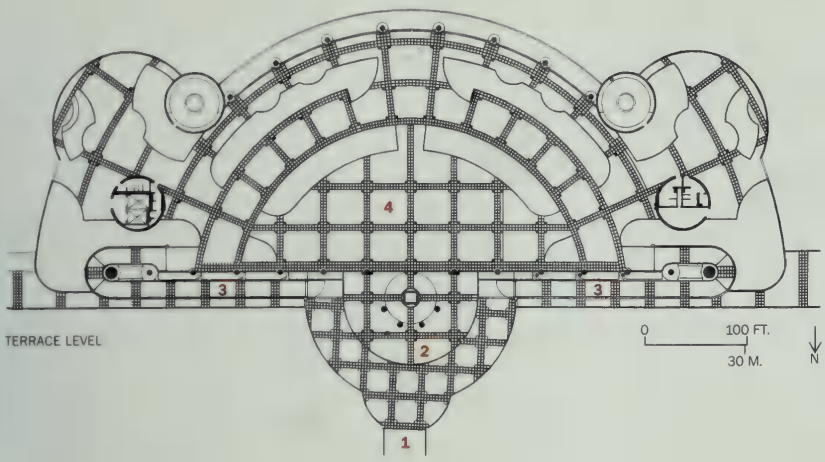
Convention centers are typically the Agent Orange of urban architecture, killing all life for blocks around. Monona Terrace uses its immediate surroundings more effectively than most, helping to reclaim the waterfront for public use as Wright intended and integrating what is essentially a visitors' building into the life of the building. The landscaped roof garden should be wonderful, even without Wright's dramatic glass domes with their fountains and sculptures. The entire building has an intriguing nighttime profile, especially when seen from across Lake Monona. Compared with convention centers in in Des Moines, Dubuque, and other competing Midwestern cities, it has cachet, and it allows us to see Wright as an urban visionary.

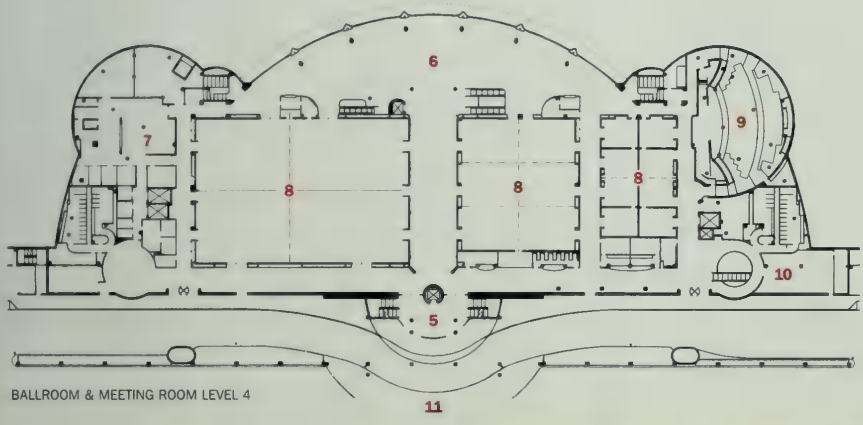
But compared to what Wright dreamed of, and to what the building might have become had Madison risen above its provincialism, Monona Terrace remains an unrealized "dream civic center"—intriguing, one of a kind, but not the dramatic exclamation point at the end of Wright's brilliant career. ■



Though Wright had hoped his esplanade could extend the avenue from the capitol without a grade change, Taliesin was forced to push the terrace one level up (above). Switchback ramps offer access (opposite bottom). Visitors on foot arrive at the center across a bridge that spans the parking ramp (right). Railroad tracks and a roadway pass underneath.







1. *Bridge to Martin Luther King, Jr., Boulevard*
2. *Entrance below canopy*
3. *Ramp to terrace*
4. *Rooftop terrace*
5. *Entrance*
6. *Grand Terrace*
7. *Kitchen*
8. *Meeting room*
9. *Lecture hall*
10. *Gift shop*
11. *Parking*

Accommodating the convention center meant forsaking the interlocking-circle planning Wright had proposed for earlier schemes (plans left and page 101).



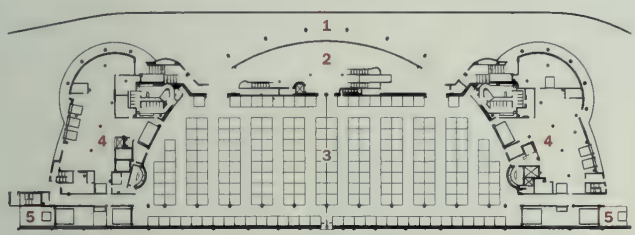


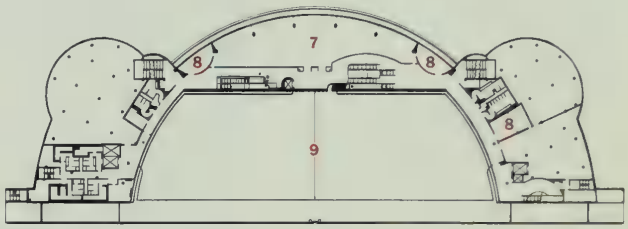


Taliesin was guided by some tentative Wright decisions in designing the interiors. The exhibition floor (below), the Grand Terrace (left), and the Capitol Promenade (opposite).



1. *Lakeside walkway and bike path*
2. *Lakeside Commons*
3. *Exhibition hall*
4. *Receiving*
5. *Truck dock*
6. *John Nolen Drive*
7. *Mezzanine terrace*
8. *Meeting room*
9. *Open to exhibition hall below*





take the design beyond the most preliminary stage, so it is impossible to know just what he might ultimately have made of it.

Akin to a couple who marry, divorce, and remarry, Madison and Wright kept coming back to each other for so many years, stormy as the relationship was, because both sides hoped that some kind of transcendent greatness could be achieved. While arguably failing to build the work of singular genius Monona Terrace had the potential to become, the design venture finally delivered to the city the building it wanted for what it wanted to pay. Indeed, the public is rarely tolerant of Wrightian excesses, even when genius has been certified. The unending political squabbles that dogged Monona Terrace can be seen as predating today's contentious urban-development climate. Consider the difficulty encountered by Frank O. Gehry in realizing the Walt Disney Concert Hall in Los Angeles.

So it is ironic that although Wright's structures tended to be wildly expensive and often suffered (indeed still suffer) from leak-prone detailing, the master's star rides higher than it ever has among both architects and the general public. Eager afficionados snap up the endless supplies of books, postcards, reproduction furniture—even neckties—licensed by the Frank Lloyd Wright Foundation, of which Taliesin Architects is a part. "Who could imagine," asks De Long, "that a building designed in 1938 could so capture the imagination that it would be built today?"

What captures our imagination about Wright's work may be precisely his penchant for overreaching the bounds his clients set for him. The lesson of Monona Terrace may be that genius sets standards that are well nigh impossible to realize in today's increasingly complex design and construction environment—and we may be the poorer for it. ■

Sources

Exterior cladding: *International Concrete Products (precast panels); Glass Fiber Reinforced Concrete (lakefront arches); Sto (exterior insulation and finish system)*
Exterior pavers: *Wausau Tile*
Roofing: *Siplast*
Window wall: *Kawneer (metal); PPG (glass)*
Doors: *Kawneer, Curries, Overhead Door, VT Industries*
Hardware: *Schlage, Hager, LCN, Forms and Surfaces, Locknetics*
Acoustical ceilings: *International Cellulose, Chicago Metallic*
Premolded coves and arches: *Classic Plaster*
Carpet: *U.S. Axminster*
Lighting: *National Cathode Corp. Kramer, Sterner, Louis Poulsen, Hydrel, Devine, Bega, Norbert Belfer, Drama Lighting*
Elevators: *Schindler*



The 1993 competition entry (opposite) shows the final form of the museum, with exhibit space extending down the hill. In this first phase of construction, the building ends with a balcony over the site (this page).

In a new twist on fund-raising, the **NAPA VALLEY MUSEUM** builds one-third of its proposed design to raise the entire budget.

by Karen D. Stein



Some architects spend years entering design competitions before they actually win one. Not Richard Fernau, FAIA, and his partner, Laura Hartman. Although landing a significant commission always seems to involve some contest, real or imagined, the duo entered what Fernau calls their "first *real* competition" in 1990 to design the Napa Valley Museum. After a staggered interview and design process that involved winnowing down an initial list of some 70 potential firms, the museum's selection committee awarded the Berkeley-based architects the job.

Fernau & Hartman Architects was already known to some in the region for its residential work—most notably, the Berggruen House in the Napa Valley town of Rutherford [RECORD, Mid-April 1989, pages 50–55]. The corrugated-metal and wood-clad components of the house typify Fernau and Hartman's distinctive brand of "reluctant regionalism," an architectural strategy inspired by the casually sited but powerfully sculptural buildings that seem as much a part of the Napa Valley landscape as the vineyards.

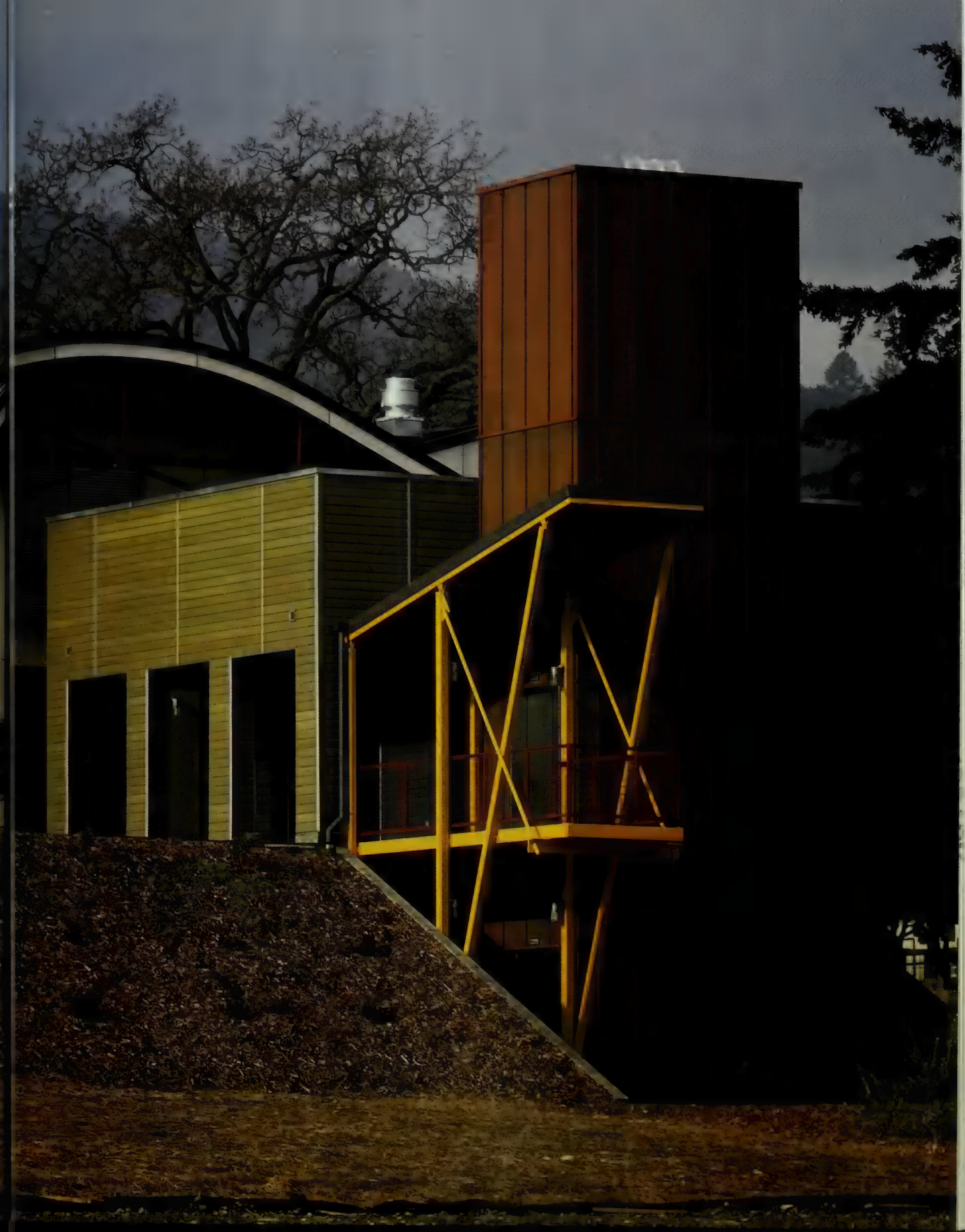
At the time of the competition, the Napa Valley Museum was at a turning point. It had been housed for several years in a former high school located in the town of St. Helena but was barely able to serve its constituency because of the inappropriate facility. John Livingston, a local vintner and president of the board during the architectural competition, remembers it as "inadequate, the unfortunate model of an upside-down museum," with storage areas for large artifacts inconveniently placed on the top floor of the three-story structure. In fact, the evolution of the institution itself was somewhat backward. The museum, says Livingston, was conceived when a citizens' group got together to come up with "something to do with that high school," a sentimental architectural favorite of St. Helenians. As the museum sought to extend its audience during the late 1980s, other deficiencies were even harder to overlook: handicap access was inadequate, and the structure did not conform to up-to-date seismic safety standards, so schools were not allowed to bring their students to participate in the museum's planned educational programs. A new building seemed to be the only answer.

Fernau and Hartman felt an immediate kinship with the museum's mission. "The program was remarkable," recalls Fernau, "because it stressed the landscape. It spoke of the landscape as having a didactic quality, and our design took off from that idea." The architects literally wove the rolling, grassy terrain through their competition scheme. They proposed a series of outdoor galleries between a linear structure housing the permanent exhibition area and a series of planted swaths in the landscape intended for agricultural displays. *(text continues)*

Project: *The Napa Valley Museum, Yountville, California*
Architect: *Fernau & Hartman Architects—Richard Fernau, FAIA, and Laura Hartman, partners-in-charge; Mark Macy and Tom Powers, project architects; David Kau, Turk Kauffman, Anni Tilt, design team; Ariel Dunkel, Henry Kitchell, Ramon Ramirez, Susan Stoltz, Alice Lin, project team; Keith Dubinsky, Sean Gilmore, Aaron Thornton, Geoff Gainer, Emily Stussi, Hugo Marrack, presentation*
Engineers: *Steven Tipping & Associates (structural); William Mah Engineers (mechanical); O'Mahoney & Meyer (electrical); Reichers, Shinnamon & Spence (civil)*
Consultants: *Steven Arns Landscape Architect (landscape); Phoenix Geotechnical (geotechnical); Britton Tree Services (arborist); Academy Studio (exhibit display); Dimensional Dynamics (gallery panels, lighting)*
General Contractor: *Wright Contracting*



To meet rigorous seismic standards, the building has a post-tensioned concrete slab secured on cast-in-place concrete and concrete-masonry foundations. Off-white fiber cement siding panels are used as cladding. The elevator tower is covered in custom-fabricated Cor-ten steel.









"The museum's most important artifact is the valley," claims Fernau. "The building shouldn't pretend to be a winery or an art gallery." In fact, the architects looked not to far-flung Loire Valley wine museums as precedents for their design but to the Napa Valley itself, its history and its architectural idioms. They were particularly inspired by the mining camps that were once a significant contributor to the valley's economy. Livingston, a trained geologist, was impressed by the architects' knowledge of Napa Valley history.

After looking around the Napa Valley for an appropriate site, the museum entered an agreement with the state to lease land from the California State Veterans Home, which is located in the town of Yountville, not far from St. Helena. Then, the museum board embarked on an ambitious capital campaign. While board members were sorting out exactly what kind of building they wanted—"something contemporary that reflects the region and something that goes beyond the typical Spanish Mission style," says Livingston—they started to look for the money to make it happen.

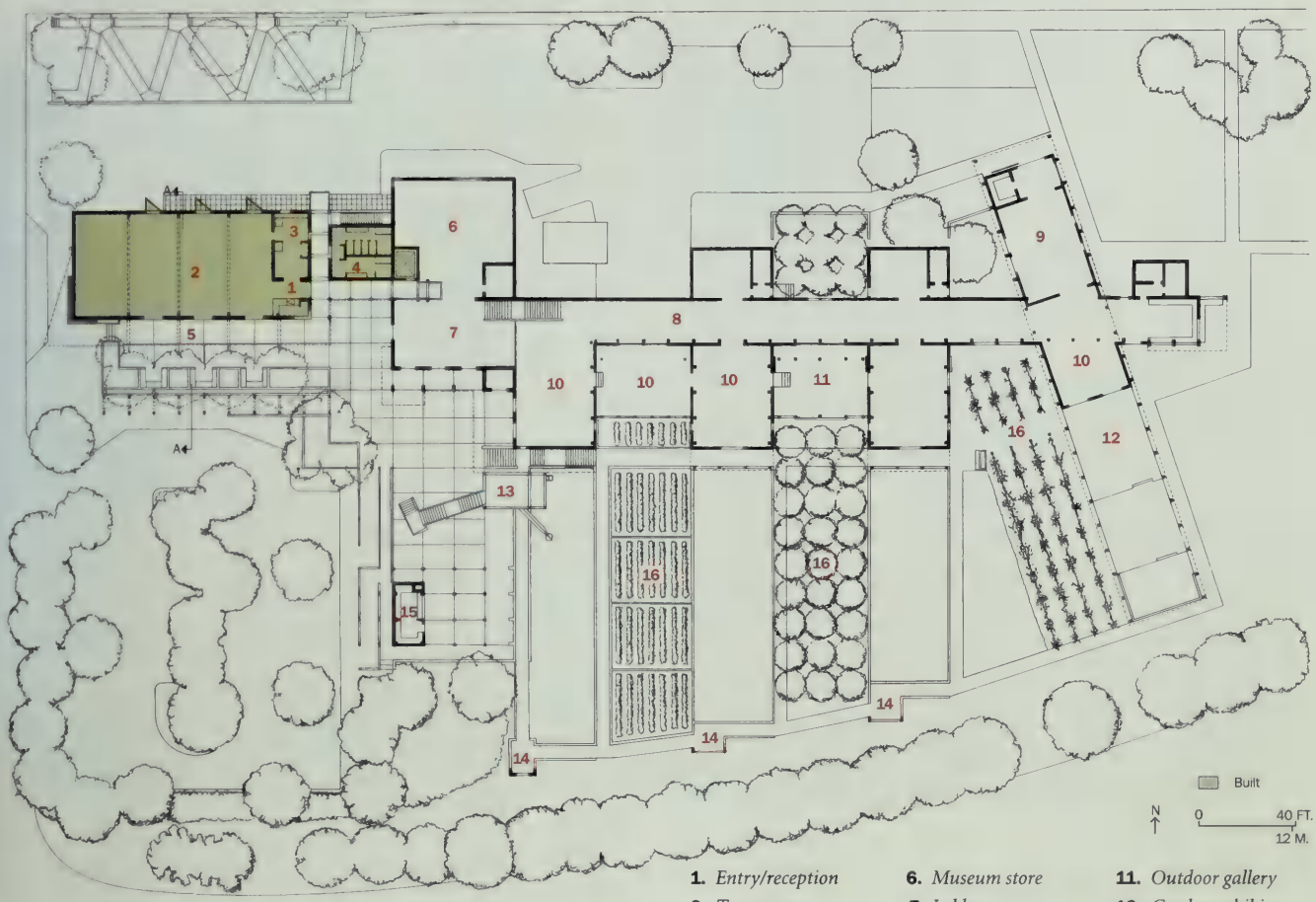
"THE MUSEUM'S MOST IMPORTANT ARTIFACT IS THE VALLEY," SAYS ARCHITECT RICHARD FERNAU.

As Fernau and Hartman's scheme moved into the design development stage, the mission of the museum became increasingly elaborate and expensive. "We kept adding and making changes to the program," says Randolph Murphy, who joined the institution as curator on the heels of the competition. "The budget went from $4 million to $6 million to $8 million and then, as more time went on, even more."

A plaza wraps around the south end of the museum, creating what Fernau calls a "great shelf" in the hill for the building.

Also growing increasingly complex was the approvals process. Because of its location, the museum discovered it needed permits from three entities: the town of Yountville, where it was moving; the State of California, which owns the land; and the County of Napa, which oversees such projects. The proposal for the new museum was "sufficiently big and sufficiently different that all the various agencies were not sure *what* to do about it, but they were all sure that they wanted to be involved," explains Livingston. Since the town had loose, often-changing aesthetic guidelines—regarding the use of concrete block on exteriors, for example—and the county and state had other requirements—regarding, for one, the type and depth of foundations—getting the proper permits from all three took more than a year, reports Murphy.

When it came to raising the necessary funds, the museum found that it had a "core of supporters," says Murphy, but by 1995 it hadn't come close to reaching its campaign goal of $10 to $12 million. "We didn't have



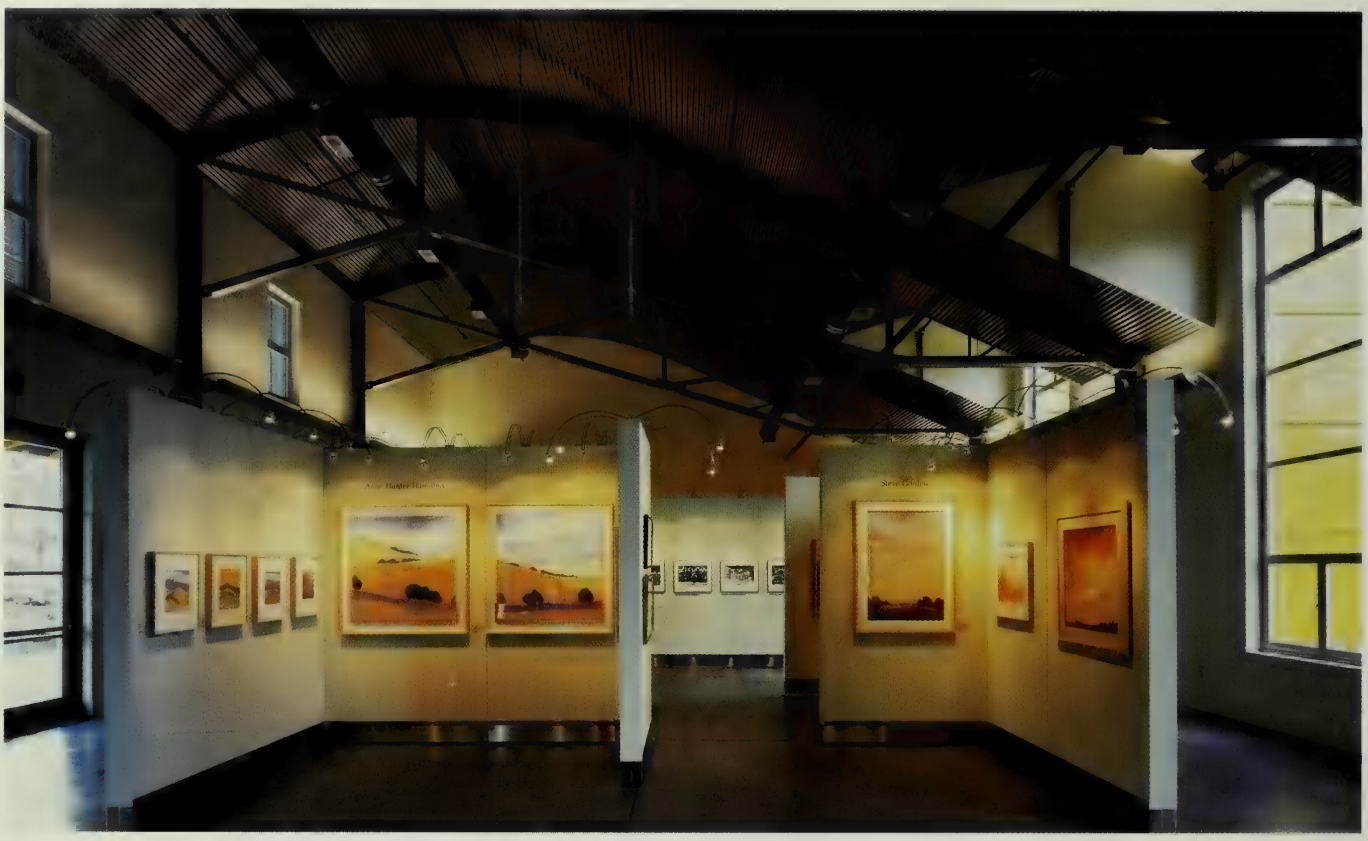
1. *Entry/reception*
2. *Temporary exhibitions gallery*
3. *Kitchen/storage*
4. *Restrooms*
5. *Donor courtyard*
6. *Museum store*
7. *Lobby*
8. *Permanent exhibitions*
9. *Education wing*
10. *Gallery*
11. *Outdoor gallery*
12. *Garden exhibit*
13. *Observation tower*
14. *Docent outpost*
15. *Café*
16. *Agricultural exhibits*

When all phases of construction are complete, the loftlike area currently used for temporary exhibitions will be transformed into a public events space.

The partially subterranean zone, now used for a display of wine-making techniques, the museum store, and offices, will be turned into storage.



SECTION A-A



a proper facility to show the community that we were worthy of being trusted with that amount of money," explains Murphy. "So we decided something concrete would show people what we were all about." To make its point, the building committee broke construction down into phases, a strategy eased by the additive nature of Fernau and Hartman's architecture.

Pinpointing the exact end of the first phase proved tricky. With about $4 million to spend, museum officials started at the top of the site, located at the west end of the property adjacent to the road, and planned to gradually expand the facility down the hill as funds became available. Reprogramming that front portion of the design to contain as many of the proposed functions as possible, the architects managed to shoehorn temporary and permanent exhibition space, curatorial and staff offices, a small shop, and storage into a 12,000-square-foot block. A plan to reorganize those spaces when the museum achieved its full 33,000 square feet was devised. But if the first phase of construction were to end just at the precipice, the museum's public face to the valley below and the town of Yountville would be rather crude: a shed of bathrooms and an elevator tower—albeit a highly sculptural one, clad in weathered steel.

A YELLOW-FRAMED CANOPY POINTS HOPEFULLY TOWARD THE SKY AS A PROMISE OF THINGS TO COME.

"It's phase 0.5," jokes Fernau of the truncated design. After all the delays in permitting and the decision to break the construction process into more manageable chunks, the first wing of the museum opened to considerable fanfare in February. The number of people who came to look at contemporary art and displays of wine-making techniques in a single day was more than the number of visitors to the old museum in six months.

"We wanted to make a definite architectural statement," says Murphy of the museum's bold colors, forms, and materials. "We wanted to show everyone that we're fulfilling our mission. Now that we are able to do that, fund-raising will be easier." Livingston echoes those thoughts, noting that he hopes the second phase comes soon. The architects couldn't agree more. "The extent of the first phase of construction is not what we thought it would be," admits Fernau, but he says he and Hartman saw it as an opportunity for architectural improvisation. So they clipped a cantilevered observation deck onto the bathroom shed. A yellow-framed steel canopy points hopefully toward the sky as a promise of things to come. ■

Sources

Concrete masonry units: *Calstone*
Exterior pavers: *Basalite*
Elevator tower cladding: *Custom-fabricated Cor-ten steel*
Fiber cement siding panels: *Eternit, Inc. (E-Flex)*
Built-up roofing: *GAF*
Painted-steel narrow batten roofing: *BHP*
Aluminum windows: *Ventana Aluminum Manufacturing Co.*
Green-tinted glass: *Solex*
Aluminum entry doors: *U.S. Aluminum*
Hollow metal doors: *CECO*
Locksets, hinges, closers: *Schlage, Stanley, Norton*
Exit devices: *Von Duprin*
Perforated corrugated aluminum acoustical ceiling: *Reynolds*
Paints and stains: *Dunn-Edwards, Cabots*
Resilient flooring: *Marmoleum*
Interior ambient lighting: *Forum, Well-Made, Lithonia, Alkco*
Interior downlights: *ALR Litelab, Prescolite*
Exterior lighting: *Stonco, Bega, Rudd, Architectural Landscape Lighting*
Elevator: *Dover Elevator*



On the east side, double doors open onto a paved courtyard. The open-span central space is for temporary exhibitions (opposite). A perforated corrugated aluminum ceiling reinforces Fernau and Hartman's material-driven aesthetic.



Is it ever too soon for a facelift? Even towering twenty-somethings like HOUSTON INDUSTRIES are sharpening their looks to keep up with the competition.



A 63-foot-high extension with square cutouts on all sides and an oculus on top helps the revamped Houston Industries Plaza stand out among the city's eclectic lineup of towers.

by Gerald Moorhead, FAIA

The last high-rise in downtown Houston was completed in 1987, three years after the oil market went bust and the city's economy collapsed. For the next decade, businesses disappeared from the depressed city at a steady pace, leaving office towers virtually empty and inspiring those in commercial real estate to dub this dismal period the see-through years. But with the economic recovery of the mid-1990s, Houston's high-rises are packed again. With vacancy rates at less than 10 percent and large blocks of leasable space no longer available downtown, companies in need of a full floor or more are forced to flee to the suburbs, where a fresh crop of medium-size buildings for major tenants is sprouting in the Texas low country.

In the last few years, owners of several older downtown high-rises have responded to this shortage of Class A office space by renovating their buildings and "repositioning" them in the real estate market. Houston Industries Plaza, the former 1100 Milam Building, extensively refurbished by architect DMJM Keating, is the most significant of these projects. Built in 1973 by JV III (a joint venture of Koetter, Tharp & Cowell; Caudill Rowlett Scott; and Neuhaus & Taylor), the 47-story tower occupies a prime site amid newer skyscrapers on the west side of downtown. The renovation of the once-lackluster tower for Houston Industries goes well beyond the typical lobby-and-toilets remodeling of spec office buildings and indicates a new direction for buildings of the near past.

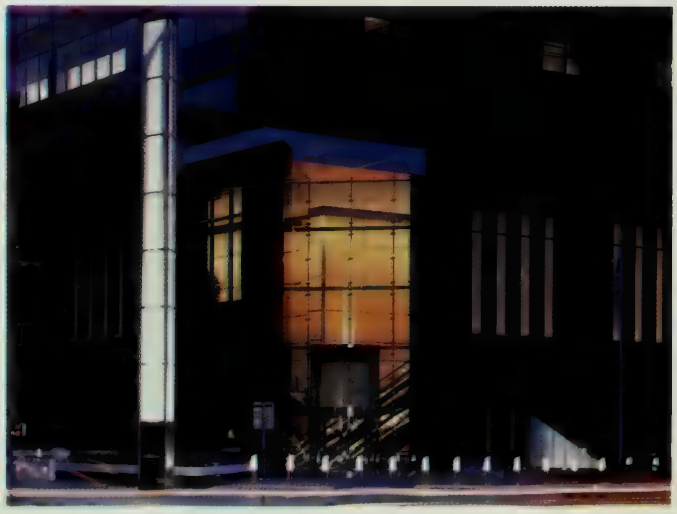
A unique real estate deal got the ball rolling. In recent years, Houston Industries, the parent company of Houston Lighting and Power (HL&P), had wanted to consolidate its far-flung empire. Because the company's home in the 27-story Electric Tower, built in 1967, did not provide sufficient room, HL&P considered various properties around the city. Ultimately, however, Houston Industries' board of directors, led by CEO Don Jordan, opted to stay downtown rather than move to a new suburban facility. By May 1992 the Houston Industries search team had closed in on 1100 Milam, three blocks south of the Electric Tower. It was about the right size, with an optimal floor plate for corporate offices of 24,000 rentable square feet, and it happened to be the largest building available downtown. What's more, although feasibility studies revealed problems, Houston Industries could still save some $50 million by not commissioning a new building. Twenty months of discussion led to the unprecedented building swap: Prudential Insurance, the owner and original developer of 1100 Milam, traded it for the Electric Tower. "The economics kept us focused," says David George, AIA, facilities manager for Houston Industries.

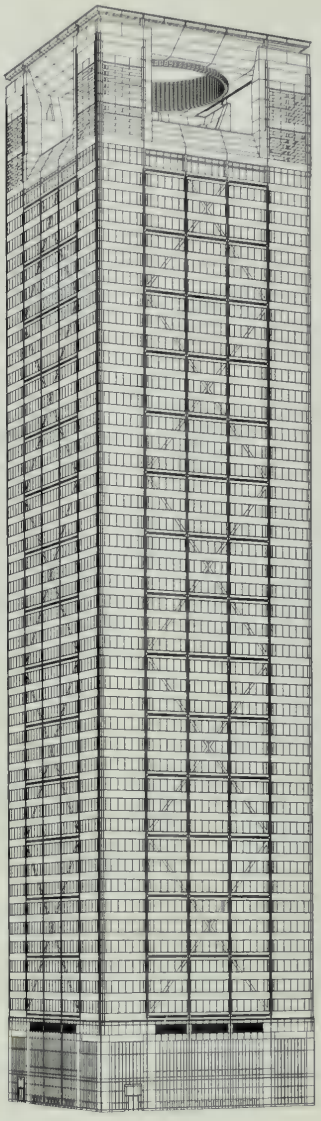
The complex deal closed in December 1993, and asbestos abatement and demolition started in March 1994. Construction of the newly christened Houston Industries Plaza was largely complete by July 1995, a schedule made all the more remarkable by the fact that only the

Project: *Houston Industries Plaza, Houston*
Architect: *DMJM Keating—Richard Keating, FAIA, design principal; Jose Luis Palacios, AIA, senior designer; Michael Mann, AIA, project manager; William Gerstner, AIA, technical coordinator; Robert Jernigan, AIA, technical director; Daniel Allen, Cory Ticktin, John DiGregorio, David Gonzalez, design team*
Associate Architect: *Kendall Heaton Architects—Bill Kendall, FAIA, Warren Carpenter, AIA, and Wayne Schull, AIA, project team*
Engineers: *CBM Engineers (structural); I. A. Naman (mechanical, electrical, plumbing)*
Interior Designers: *Lehman Smith Wiseman (executive floors); Ziegler Cooper (typical floors)*
Consultants: *Clark Condon Associates (landscape); Fisher Marantz Renfro Stone (lighting); Cerami Associates (acoustical); Hines Interests Limited Partnership (real estate)*
General Contractor: *Miner Dederick*

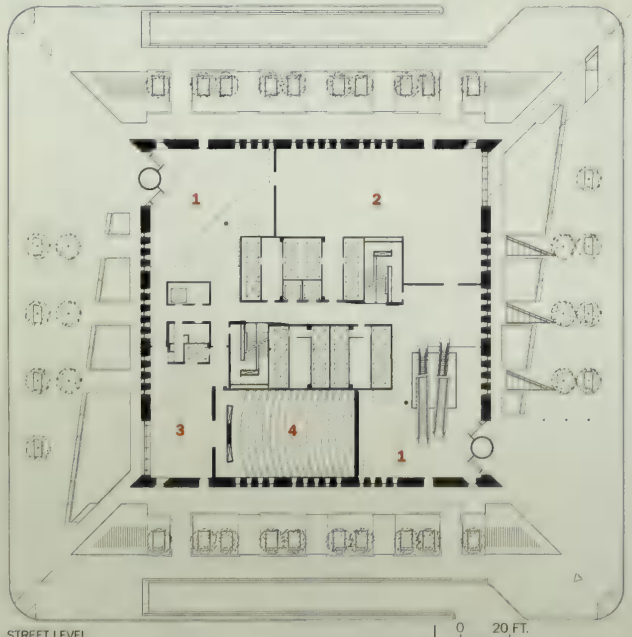
Contributing editor Gerald Moorhead, FAIA, is an architect based in Houston.

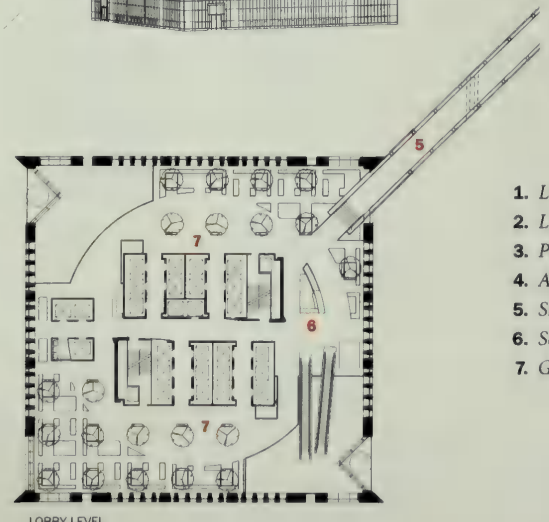






Architect DMJM Keating replaced the sloped glass skirt of the 1970s with a two-story granite base but retained the original curtain wall above (top left). Luminous glass forms delineate the perimeter of the Houston Industries site (below left and opposite). The X-shaped braces were added behind the existing curtain wall to increase wind-load resistance (drawing left). Unlike those in the drawing, the actual braces are invisible from outside.





1. *Lobby*
2. *Leasable space*
3. *Prefunction area*
4. *Auditorium*
5. *Sky bridge*
6. *Security desk*
7. *Garden*



sidewalk from the building face to the curb was available as a staging area.

Among the most substantial problems to be resolved in the renovation was the building's curtain wall, an homage to the taut skin of Skidmore, Owings & Merrill's 140 Broad Street in New York City, built in 1967. Due to leaking at the curtain wall's flared base, buckets tinted to match the mullions had become permanent fixtures at 1100 Milam. Two

IN AN UNUSUAL SWAP, THE COMPANY TRADED BUILDINGS WITH A NEIGHBOR.

decades of exposure to Houston's blazing sun had given the dark bronze anodized-aluminum surface a dingy appearance.

In addition, retail areas on the ground level under the base had never been commercially viable and were not needed by an owner looking for sole occupancy. Because of obscure entries, hard-to-find escalators to the second-floor elevator lobby, and an eccentrically arranged core that confused circulation, the first two levels required complete reorganization. The building had been notorious for its exaggerated sway, and studies revealed that it was not up to current codes for wind loading. And, as if the structural and organizational deficiencies weren't problematic enough, the dark, square-topped tower, squat in comparison to its neighbors, projected an undistinguished corporate image on the skyline.

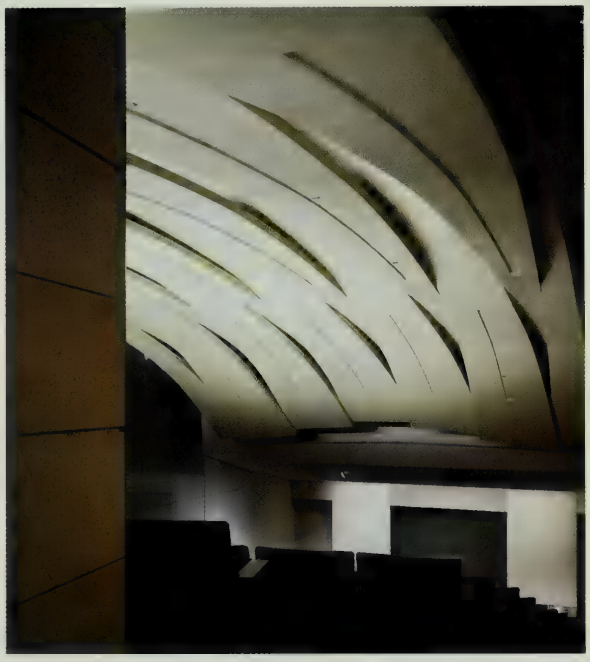
The redesign draws attention to the top and bottom of the tower—the long view and the close-up—leaving the curtain wall in place from the third floor to the roof. After studying sloped, peaked, and spired shapes, the architects decided on a 63-foot extension at the top of the building with large cutouts on each side and a huge oculus on the top. "Windows on the sky" is how Jose Luis Palacios, AIA, the project's senior designer, describes the effect. By eschewing a more stylized design for the building's top—one that would quickly date itself—DMJM Keating provided Houston Industries with a cleaner, more enduring signature on the skyline, according to design principal Richard Keating, FAIA. And because the cutouts can be seen from up the street, they help to reinforce the building's image with pedestrians.

The top of the tower is graphically simple, and the new base is similarly restrained. Where the sloped base and the second floor used to



Circular volumes were used to organize the lobby, which is treated as an urban garden.





Newly positioned escalators now allow visitors clear access to elevator lobbies on the second floor (left). The design of the auditorium's gypsum-board ceiling (above) was inspired by the patterns that vacuum cleaners leave in carpets, say the architects.

be, a sheer facade of black granite pulls the tower's mass straight to the ground. Two-story-high glass entrances are set into the corners, opening on reorganized lobbies. Within the lobby, the bird's-eye-maple and frosted-glass-sheathed elevator cores are freestanding elements surrounded by the black-granite shell. The points of entry and new circulation path to the elevator banks are now clear and direct, improvements due in part to the newly carved-out double-height space.

THE REDESIGN FOCUSES ON THE LONG VIEW AND THE CLOSE-UP.

The complex sidewalk treatment complements the simplicity of the tower's form. A sequence of edgy, triangular frosted-glass and stainless-steel skylights projects sharply from the landscape buffer between the building and the sidewalk, bringing light to Houston's subterranean world of restaurants, shopping, and services (this is, after all, a town where most of what passes for street life takes place in tunnels). Back on the surface, illuminated bollards are arranged like a dotted property line around the city block, demarcating the public thoroughfare from the more-private company sidewalk.

The resolution of the structural problems was as bold as, if less visible than, the solution to 1100 Milam's public-image and circulation problems. The tower was reinforced by the insertion of nine-story-tall steel cross braces on each side of the building behind the existing curtain wall, extending from the foundation to the roof. The second column from the corner was tripled in size to accommodate the force of these new braces. Surprisingly, the powerful cross braces and supercolumns have only a modest impact on the interior.

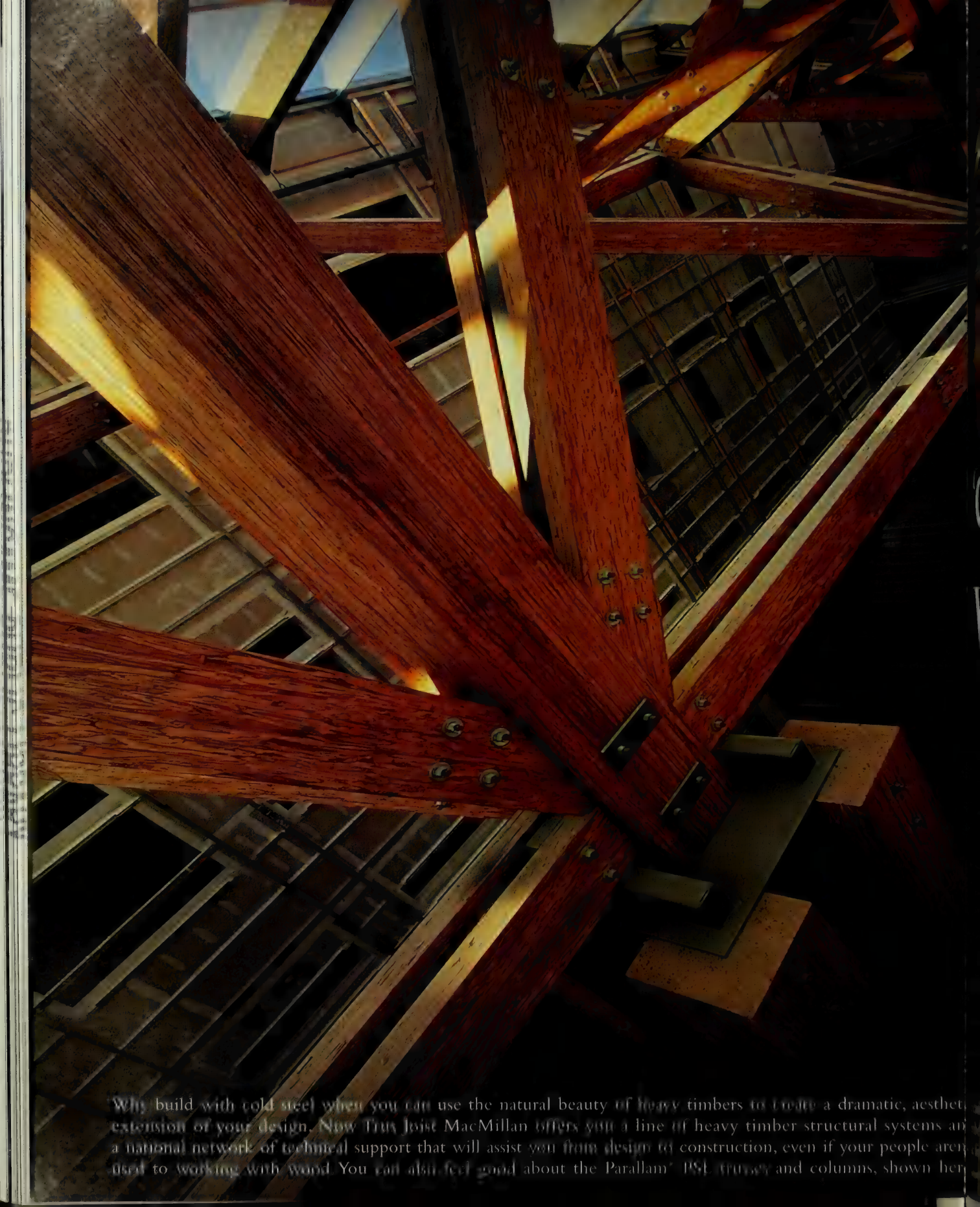
The other major problem to be solved in creating Houston Industries' new headquarters was as much a legal issue as a technical one. The tower was part of an original development package that included a Hyatt hotel on an adjacent block; the tower and hotel had always shared the mechanical plant on the roof of the hotel's parking garage. Part of the Houston Industries and Prudential Insurance tower swap was an agreement to continue sharing the plant. Cold water from the plant chillers is piped through the hotel and across an existing pedestrian bridge, which connects the hotel to the tower. Upgraded air-handling and distribution systems were installed in the tower.

As a final touch, the tarnished curtain wall from the third floor to the roof was painted with a fluoropolymer coating. Although outdoor spray painting is not permissible in many other cities, it is allowed in Houston, making for an economical solution to a condition that might otherwise have called for an entirely new skin for the tower.

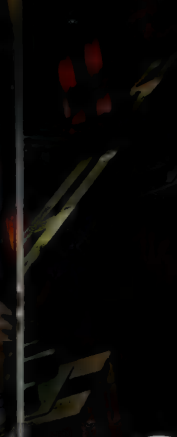
While several other downtown high-rises have undergone substantial renovation, Houston Industries' transformation of the skyline sends another message to a city suddenly in search of premium office space: even 20-year-olds can benefit from a little cosmetic surgery. ■

Sources

Coated aluminum and glass panel exterior cladding, windows: *Hayley Greer, Baker Metalproducts*
Fluoropolymer coating: *PPG (Duranar)*
Exterior stonework: *Lucia, Campolonghi Italia*
Stainless-steel skylights: *Berger Iron*
Sliding-glass entry doors: *Tajima*
Fire-control doors, security grilles: *Cookson*
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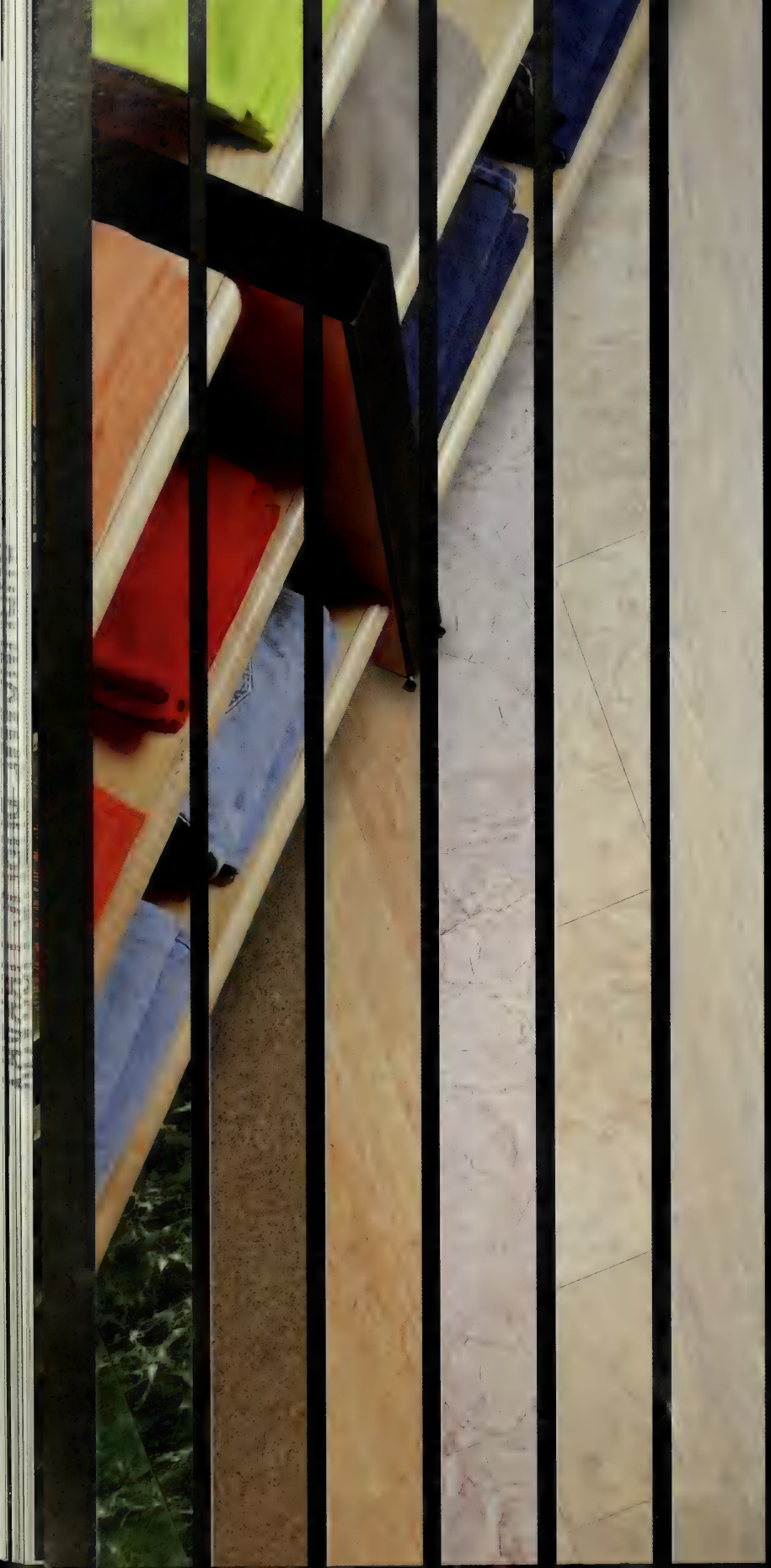
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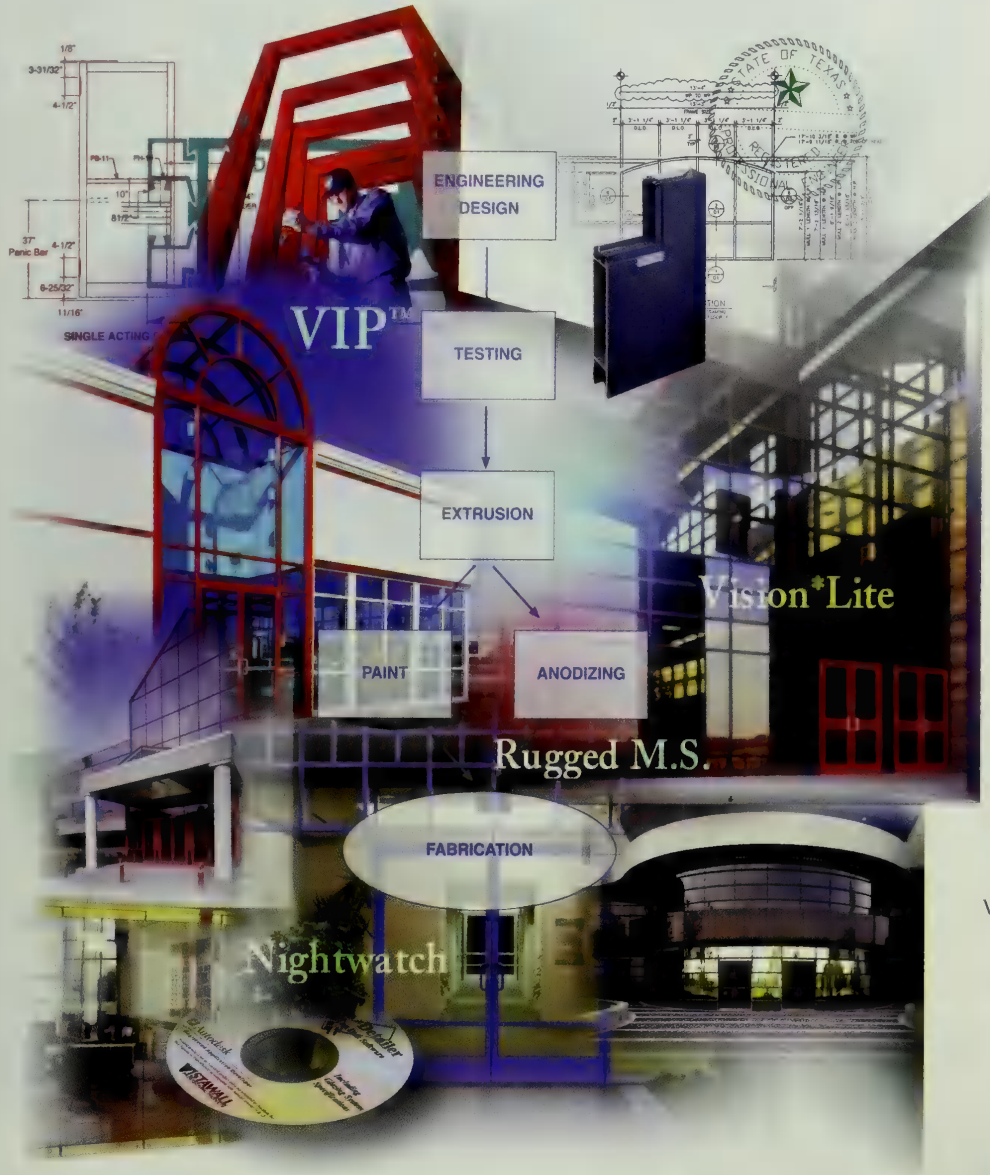
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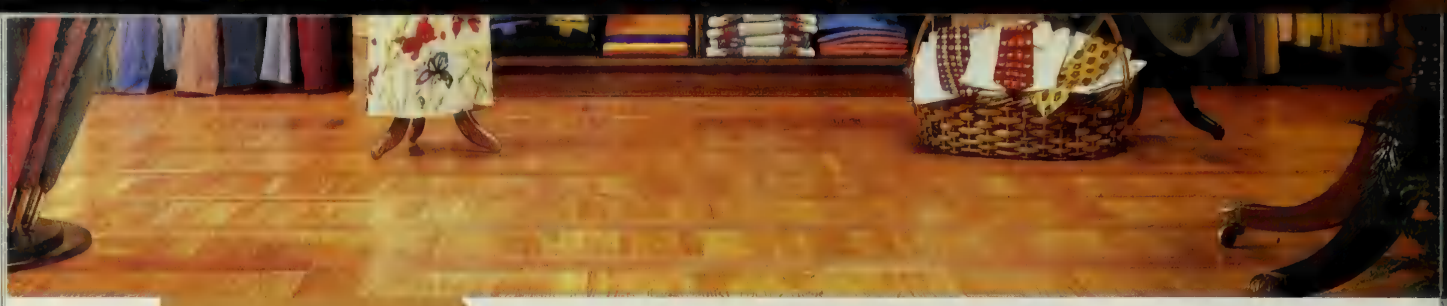
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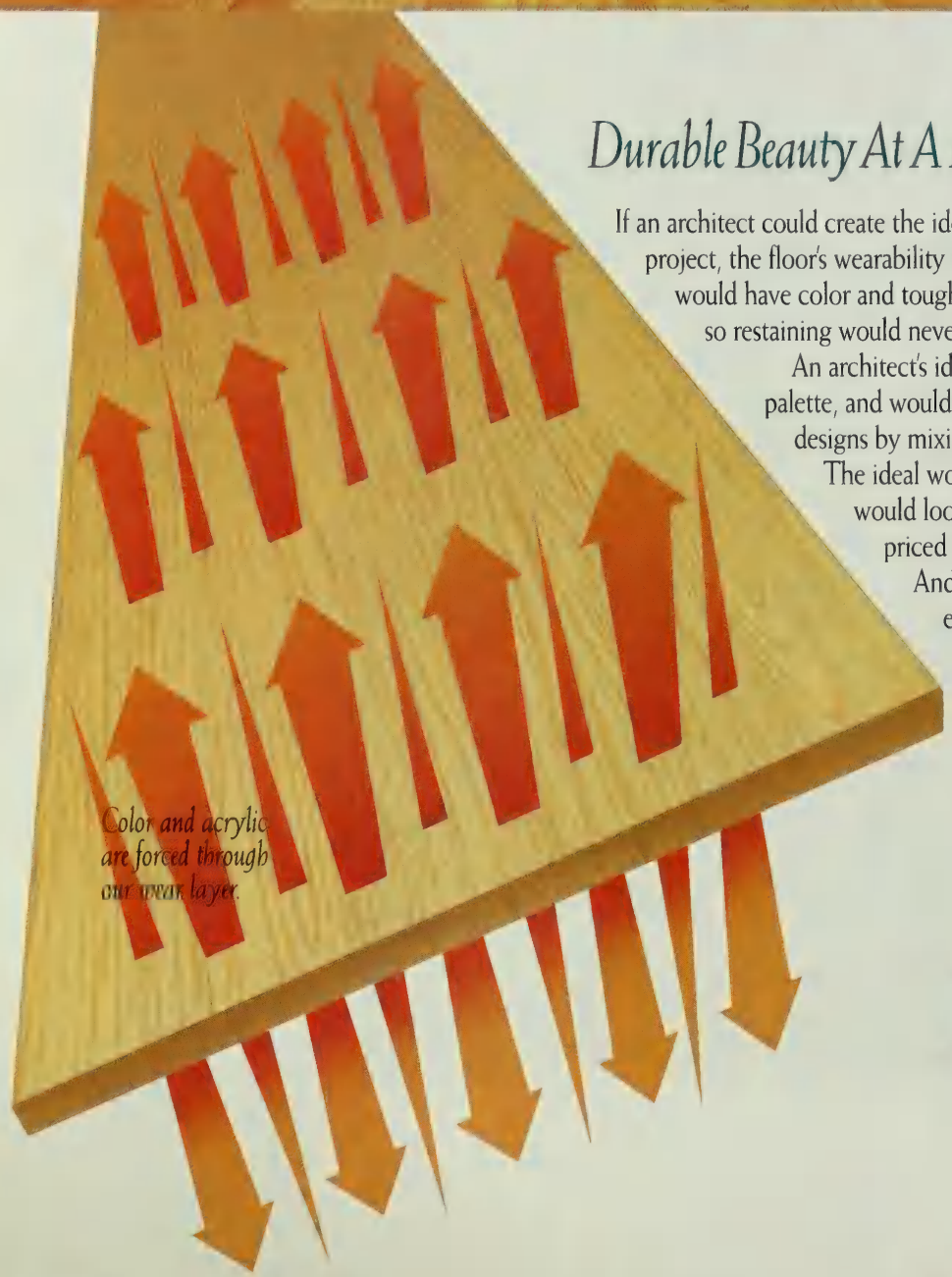
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Main Street Goes Suburban

WITH RESIDENTS OF AMERICAN SUBURBAN SPRAWL CRAVING COMMUNITY, DEVELOPERS ARE RESPONDING BY MAKING NEW PLACES WITH TRADITIONAL DIVERSITY.

by Charles Lockwood



1

Orlando, Florida

A neoclassical landmark and elements borrowed from live music concerts inspire SPF:a's design for a Virgin Megastore.



2

Roseville, California

Architect Mark Dziewulski reinvents the strip-mall formula by including sculptural exterior forms and shopper-friendly amenities.



3

Edwards, Colorado

Circle West Architects makes a precast-concrete office/warehouse complex appealing to retailers through careful detailing and adaptable spaces.

While building totally new suburban main streets may prove to be among the most powerful retail trends of the next few years, as Charles Lockwood explains below, the projects that follow reflect a range of design approaches.

In the hit-or-miss world of retail, where a new idea may fizzle out only months after the paint dries, the regional mall has reigned supreme for decades, not only as the place to purchase everything from power tools to pasta but also as the center of what passes for public life in suburbia. Only recently has the mall's retail hegemony finally faced a real threat, and it is, of all things, Main Street.

Once again, the idea of Main Street—a friendly, small-scale place where people and activities mix in a relaxed way—has captured the imagination of retailers, developers, and shoppers. For decades older towns and cities across America have fought an often-losing battle against highway strip centers and freeway-ramp-entwined megamalls. Now some post–World War II suburbs—which had never seen a parking lot they didn't like—may co-opt their old rivals through the sincerest form of flattery by building new kinds of main streets from scratch.

"Every major metropolitan area has two or three new suburban main street projects, which means at least 50 to 100 such projects are under way or planned across the country," claims architect Richard Heapes, AIA, of Cooper Carry & Associates, which has designed a number of these projects. Main streets are sprouting up everywhere. For some evangelists, the approach could go much deeper and represent a new and more sustainable way of building and rebuilding suburbia.

A genuine main street is not determined by a particular architectural style. Like pre–World War II small-town main streets, say proponents, the new suburban main streets should have a range of everyday uses and activities—including office, retail, entertainment, hotels, housing, and civic institutions like public libraries—that put people on the street day and night within a pedestrian-friendly environment.

The scale is important: it's not as vast as the regional mall or "power center" of big-box discounters. Nor does it need to be a region-wide tourist-destination festival marketplace to succeed. "You cannot have the major stores or big-box retailers on a pedestrian-oriented street," notes Kalvin Platt, FAIA, chairman of the SWA Group, an international

Charles Lockwood, based in Topanga Canyon, near Los Angeles, has written seven books on American architecture and cities.

land planning and landscape architecture firm. "Their buildings and their parking lots are simply too big for the main street scale. Main streets are appropriate for smaller, employee-oriented, high-service shops and professional offices, not low-employee, low-service big retailers."

Certainly, New Urbanism—as represented by the Walt Disney Company's new town of Celebration—has influenced the main street idea, but the retrofitting of auto-oriented suburbia in the main street mode could be far more important. "Since the Second World War, most suburban development has focused on the house, the car, the shopping center—it has created a collection of isolated pieces," says Philip J. Enquist, AIA, a partner at the Chicago office of Skidmore, Owings & Merrill. "The street was simply used to move cars around. Many people forgot the broader role of the street in the community's civic life—as a place for people to shop, to walk after dinner, or simply to come together in a shared public realm."

In the last five decades, the prevalent low-density patterns of urban development webbed with freeways conspicuously avoided the kind of potentially messy, diverse public places of traditional cities and towns. For years, architects and urbanists seemed to be shoving such places down the unwilling throats of suburbanites. "Now the pendulum is swinging back the other way," Enquist says. "More and more people want a return to the traditional main street, particularly its sense of belonging and community. In the near future, we may look back on the postwar decades as an anomaly—as the only time when new communities lacked a true main street."

FOR SOME EVANGELISTS, THE MAIN STREET APPROACH COULD REPRESENT A MORE SUSTAINABLE WAY OF BUILDING AND REBUILDING SUBURBIA.

How does main street fit into the world of car culture?

The new suburban main streets take many forms—from several-block-long streets (narrower than normal to slow the pace) to tree-shaded town squares. In Valencia, California, 30 miles north of downtown Los Angeles, the Newhall Land and Farming Company is building a $100 million, half-mile-long main street called Town Center Drive (page 127). The street forms a pedestrian-oriented bridge linking a development of several hundred apartments to Newhall Land's successful five-year-old regional mall. Patrons approach the mall not across the usual parking-lot wasteland, but via the main street, the end of which actually abuts the mall concourse.

Thus, explains Thomas L. Lee, Chairman and CEO of Newhall Land, "the mall will benefit Town Center Drive, and vice versa, by virtue of their proximity and direct pedestrian connection." Both mall and main street are a far cry from the megastructure downtown that Victor Gruen's 1965 master plan called for. "We wanted a lively, small-town main street," Lee continues. "So we planned a traditional mix, including offices, housing, entertainment, and distinctive shops and restaurants—both large and small—that really serve local needs and demographics."

At Haile Plantation near Gainesville, Florida, architect and developer Robert B. Kramer, AIA, and his partner, Matthew Kaskel, are completing a one-third-mile-long main street as the centerpiece of this 1,700-acre master-planned community. "Although our original late 1970s master plan designated a traditional town center at this site," says Kramer, "we couldn't move forward until we had about 1,000 houses built to create the critical mass that would support it."

Construction of the Village Center finally began in 1992. Kramer laid out the street and designed about three-quarters of the stores and professional buildings, which are relatively small and usually have apartments on the second floors. "We don't have a written code," says Kramer, as such traditional new developments as Seaside, Florida, have. "But the basic plan, which was pre-approved by the regulating agencies, designates the location of buildings and other big-picture issues. When other architects design a building, I meet with them and try to come up with a satisfactory approach to materials, scale, and colors."

Haile Plantation's gently curving new main street has garnered strong market acceptance, which distinguishes it from less mature neotraditional developments, some of which have had trouble inspiring commercial development at the desired neighborhood scale. More than 40 buildings line the street. About half of the commercial property is owner-occupied. "We have the traditional mix of main street uses—plenty of shops including a corner grocery store, a dry cleaner's, a post office, a dentist, a stockbroker," says Kramer. "We didn't create a list, and say, 'We've got to have those people.' They came to us, so there must be a demand for our kind of main street." Planned projects include a town hall, a 100-unit apartment complex, an assisted-living facility, and a 75-unit lodge and conference center.

More and more, municipal governments aren't waiting for developers to build main streets. They are moving ahead on their own. Schaumburg, Illinois, a vast swath of office parks near Chicago's O'Hare Airport, has more than 74,000 residents, over 193,000 jobs, and the Woodfield Shopping Center, one of the world's largest malls. But it had no central place that residents could call their own—until now.

Schaumburg's village government assembled a 29-acre site (which included a failed retail center) over several years and developed a Town Square master plan with a new park ringed by buildings for retail, commercial, and civic use (page 126). In 1995 it started selling off parcels to developers. "We didn't want to own the project," says Mayor Al Larson. "We just wanted to create a plan reflecting our vision for the site and the community, and sell parcels to developers who would build our vision."

A 55-foot-tall clock tower stands at the square's main entrance—an instant landmark. The Schaumburg Township Library, now under construction on the west side of the square, is expected to attract one million visitors a year after its September 1998 opening. It will serve as Town Square's primary anchor. A 65,000-square-foot grocery store, located in the parking lots just behind the square, serves as the second anchor. A two-story retail/office building and a single-story retail/office building have been completed on the south side of the park.

Main streets in mixed-use complexes

The main street idea has become a key feature in some new large-scale developments as well. In August 1997 the Winmar Company opened Redmond Town Center, a 1.37-million-square-foot mixed-use project centered around a five-block-long new main street on the site of a former golf course in Redmond, Washington (page 126). It is giving new life to the previously stagnant center of this former farm village at the edge of the Seattle metro area. (Microsoft's headquarters are only a short distance away.) This open-air, mixed-use complex (touted as a "lifestyle center") has many retail stores like the Gap and Abercrombie & Fitch, but it also includes office buildings, housing, restaurants, an eight-screen Cineplex Odeon, a hotel, and 40 acres of parks and open space.

Three thousand miles away, suburban Rockville, Maryland, is replacing a failed downtown mall with a $300 million, 1.5 million-square-

foot mixed-use development that includes a new four-block-long main street. The goal of the project is to transform the city's image and, as Mayor Rose Krasnow says, to "put the heart back into the city."

Forces fueling the trend

Why are postwar suburbs, which previously celebrated the predictable convenience of the mall and highway-strip center, suddenly building these new main streets? Some of the same social and economic forces propelling New Urbanism into the mainstream are also encouraging the new suburban main street trend.

Americans' hunger for community. In a nation where families move frequently and fewer live in extended-family or multigenerational neighborhoods, more and more Americans feel isolated and alone. With most people now living in places where urban-development patterns have emphasized private space over the public realm, the vast majority of respondents to homebuyer surveys place a sense of community at the top of their list of priorities. The new main streets, derived from New Urbanist principles, are a direct response to our hunger for community.

A need for identity. As more and more look-alike suburbs compete for residents, jobs, conventions, and tourists, they see new main streets as one way to create an easily recognizable—and marketable—identity. The idea is not just to make a place, but a destination.

Suburban renewal. Many suburbs built in the 1950s and 1960s are declining, just as big-city neighborhoods did a generation or two ago. Outside Chicago, for example, the suburb of Park Forest watched its population shrink by 14 percent and its median household income slip 3 percent in the 1980s, compared to a 7 percent increase nationwide. A few years ago its 695,000-square-foot Park Forest Center regional mall was plagued by a 70 percent vacancy rate. Park Forest has bulldozed most of the mall buildings as it seeks revitalization by building a new main street.

A craving for reality. "People are numbed by overstructured, formulaic, prefabricated places," says architect Richard Heapes. Designers, too, are at fault, he claims. "Signage standards, architectural standards, common streetscape elements, special streetlights or brick pavers, all work against a street or a place being real. One strength of main streets is their diversity. They have a few bad buildings, as well as background buildings and look-at-me-buildings, and mom-and-pop stores, which redevelop over the years. This makes main streets real, one-of-a-kind places that people can touch and feel and smell. A mall can't give them that."

Changing demographics. In the first decades after World War II, suburbs housed mostly young families with children. Now suburban residents include many single adults and childless couples who may prefer a townhouse to a detached house, and increasing numbers of older residents who may want to depend less on automobiles. Multifamily housing on or near the new main streets serves their needs.

In Redmond, Washington, the 200-unit square-block LionsGate apartment complex, which is built above ground-floor shops and home businesses fronting on the street, attracted older and single residents who wanted to be near the new Redmond Town Center development and its new main street. LionsGate was designed by Seattle-based GGLO.

Evolving retail trends. A critically important factor is some retailers' shift away from suburban malls. Some experts claim that retail is



The many faces of the new Main Streetism: Roger Ferriss adds new mixed uses to old in Westport, Connecticut (top right); a gently curving street is the centerpiece of the master-planned Haile Plantation (top left, bottom right); GGLO makes the 1950s University Village mall in Seattle more intimate (bottom left).







Redmond Town Center extends the city's existing center (left) and has drawn LionsGate, a higher-density housing development (right).

driving the main street trend. Others insist that retail is following it. According to the June 1997 issue of *Stores* magazine, "the revitalization of main street has caught the imagination of retailers, who see neighborhood locations as a viable means of growth."

A number of leading retailers like the Gap, Williams-Sonoma, the Limited Stores, and Barnes & Noble now want the distinct identity—with an individualized storefront or building—that a main street can offer but a mall can't. "We open stores where the consumer is," says Beverly Butler, director of corporate external communications for the Gap, "and work to become part of the fabric of the community. A significant portion of our future sites will be off the mall."

"Today's new suburban main streets are not an entirely new phenomenon," says Alan Hess, architecture critic for the *San Jose Mercury News*. "If you look back to the 1920s and 1930s, you'll see efforts to create a downtown or main street environment in early automobile-oriented suburbs like Country Club Plaza in Kansas City and Westwood Village near U.C.L.A. in Los Angeles. They were laid out to accommodate the automobile yet create an urbane environment for people. Even though these prototypes were quite successful, we unfortunately forgot about them in the 1950s and 1960s suburban boom."

Instead, malls and their oceans of parking grew and became harder to tell apart. But a few pioneering projects—including Mashpee Commons, in Massachusetts, designed by Andres Duany, AIA, and Elizabeth Plater-Zyberk, AIA, for Fields Point Development Company; Mizner Park, designed by Cooper Carry & Associates; and Reston Town Center, in the 1960s "new" town of Reston, Virginia, outside Washington, D.C., designed by RTKL—"really went out on a limb," says Plater-Zyberk, dean of the School of Architecture at the University of Miami and chair of the Congress for the New Urbanism. "They believed, in spite of conventional market wisdom at the time, that people wanted something different than what was being provided."

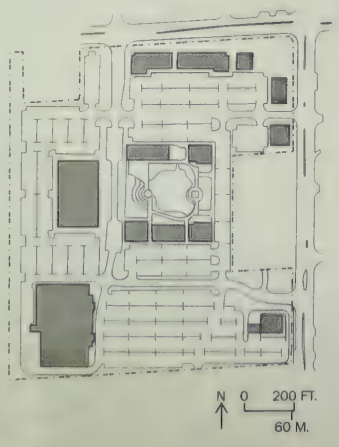
Although these innovative new suburban main streets attracted widespread attention, the early 1990s recession stifled this new development trend for several years. With the return of prosperity in the mid-1990s, as well as cutthroat competition for market share among retail chains seeking to differentiate themselves, the new main streets came back.

Roadblocks to Main Street's success

Despite its increasing popularity, the new suburban main street trend faces several hurdles. The first major roadblock is money. Constructing a new main street is a long-term project that generally demands deep pockets or a strong tax base. Many developers and redevelopment-minded suburbs have neither. Compounding this problem, most suburbs must pay today's high prices for land before they can even draw up their plans.

A second roadblock is often site assemblage. Building a new main street on a greenfield site is the exception, not the rule. Most





The city government of Schaumburg, Illinois, assembled a site to form a green public center. Patrons of a greenery-surrounded, fountain-splashed pool and a new library (center left in plan) will mix with shoppers. Hitchcock Design Group was the planner and landscape architect.

suburbs, like Schaumburg, must assemble their main street sites through negotiation or eminent domain, which requires political will and funds.

The third roadblock is inflexible municipal and traffic codes, which can wreck an otherwise-promising new main street. Many jurisdictions require rights-of-way too wide for the intimate scale successful main streets require. Newhall Land had to build its two-lane, 53-foot-wide Town Center Drive as a privately owned and maintained street, so it could avoid the publicly mandated four lanes and 64-foot roadway.

Design and planning challenges

Besides these problems, architects and planners must address three critical design challenges with new main streets: the buildings, the street, and the street's integration into the surrounding cityscape. At Schaumburg Town Square, for example, the building fronts with most of the large, pedestrian-pleasing windows face the parking lot. Oriented to Town Square are unappealing expanses of blank wall, vaguely intimidating steel service doors, and emergency exits.

"Whether new or old, a main street should be no more than an easily walked four or five blocks," says Boris Dramov, FAIA, a principal at ROMA Design Group, which has worked on half a dozen main streets in California. "Sidewalks should be wide enough to encourage walking, yet narrow enough to keep people close together near store and office windows to create a feeling of energy on the street."

While a successful main street design can supplant some auto trips, accommodating parking and access is still critical. Poorly designed parking lots and parking structures can isolate surrounding blocks, creating a mall-like destination surrounded by a dead zone. "Small-surface lots will help eliminate any barrier between a main street and the surrounding district," says Dramov. "Then, place retail uses that can't afford main street rents—such as beauty parlors, used bookstores, and family-owned restaurants—in the ground floors of parking structures to help support the transition from the main street to the adjacent streets."

Cookie-cutter main streets

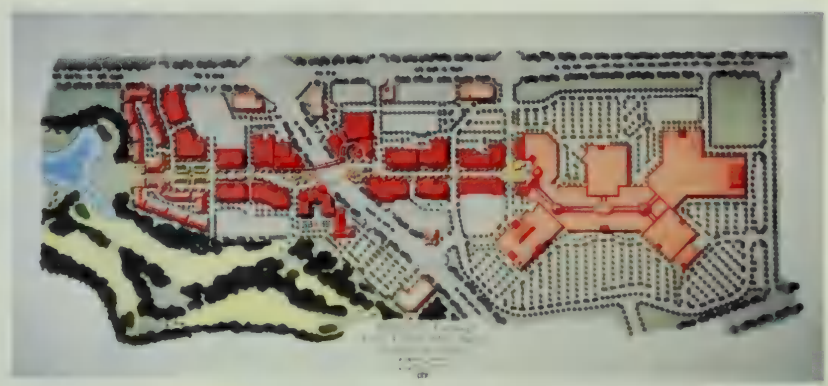
Probably the biggest threat to the success of the new suburban main street is the real estate industry's mania for formulas. Developers and municipalities that see a successful project work in California will replicate it down to the last paver in Texas or Massachusetts rather than create an evolved streetscape based on the market, history, and demographics of a place. Others will strip it down to "get the look" while cutting costs, leaving residents with a stage-set version of a 1950s outdoor mall. Big developers, says Plater-Zyberk, "are jumping on the main street bandwagon without appreciating the intricacies that can make or break a public realm."

Developers of the vast 1.7-million-square-foot Mall of Georgia, now under construction 35 miles northeast of downtown Atlanta, for example, claim that the megamall will include an outdoor "town center," complete with brick facades and traditional awnings for its shops and restaurants. Actually, they're constructing little more than a food court.

Yet, there is real hope that many new suburban main streets won't be corrupted and can live up to their promise. Haile Plantation, for example, has become a must-see for touring developers and architects. "They come here," says Bob Kramer, "and tell me, 'We went to Celebration and liked it, but we don't have Disney's money to do something that large, and all at once. But if a Joe Ordinary developer like you can do it in small market-driven increments, I guess we could do this kind of main street development, too.'"

It's too early to say whether the new main streets can transcend developer formulas, or whether suburban main streets will simply become the latest development device in the supplanting of historical centers in towns and cities. Certainly more diverse public places have the potential to mend the lack of center so often found in sprawling postwar suburbia. Not only can they create real civic realms where none existed, but they can set a direction for the era of suburban renewal that appears to be fast approaching. ■







Victor Gruen proposed a megastructure, international Modernist downtown for Valencia, California, in 1965 (above left), but it was built in a conventional low-density pattern. Newhall Land's Town Center Drive (above) offers a more traditional vision. It springs from the edge of the existing mall and is lined with mixed-use structures; the one at left, designed by Johnson Fain Partners, houses a bank, offices, and other retail.

1 Virgin Megastore Orlando, Florida

TO EXPRESS THE SPIRIT OF THIS MUSIC STORE CHAIN, A NEOCLASSICAL ARCHITECTURAL IDEAL WAS WRAPPED IN ROCK 'N' ROLL IRREVERENCE.

by Shax Riegler

Project: *Virgin Megastore, Orlando, Florida*
Owner: *Virgin Entertainment Group*
Architect: *Stenfors Pali Fekete Architects (SPF:a)—Jeffrey S. Stenfors, Zoltan S. Pali, AIA, Judit M. Fekete, S. Daniel Seng, Drew Wilson, Cherry Lietz, Yo Hakomori, Peter Ridley*
Associate Architect and Store Designer: *Irvine Johnston Design Consultants*
Engineers: *W.P. Moore & Associates (structural); Tilden, Lobnitz, Cooper (mechanical, electrical, plumbing)*
Consultants: *Irvine Johnston Design Consultants (lighting); Pat Stein & Associates (kitchen); Ride and Show Engineering (performance platform); Audiovisions (sound/visual system)*
General Contractor: *Sunseri Associates*

Size: *40,000 square feet on two levels*
Cost: *$12 million*
Program: *Departments for selling music in various formats including compact disc, video, laserdisc, digital-video disc, multimedia games, software, and CD-ROMs; 300 listening stations, 20 video-viewing stations; 6 computer stations; full-service café; book and magazine department; and separate children's area*

Bring the energy of a live musical performance at London's Royal Albert Hall to Florida swampland? Such was the directive the Virgin company and its longtime store designers, Irvine Johnston, issued to SPF:a, the small, young Los Angeles–based architecture firm it had hired to design its newest Megastore, in Orlando. The store's site is prominently located within Downtown Disney Westside, the latest addition to Walt Disney World's 120-acre shopping and after-dark entertainment destination.

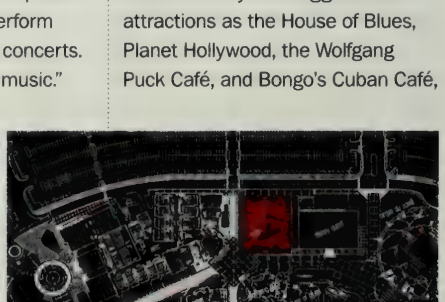
Like other retailers who seek to lure patrons by entertaining them [see Building Types Study 747, March 1997, pages 90–115], Virgin offered a starting theme—in this case, the Royal Albert Hall, intended to evoke Britain's contributions to musical culture. Although the project's production schedule was fairly short (it was designed and built in under two years), Virgin had already established a track record with Zoltan Pali and Jeffrey Stenfors, two of SPF:a's principals, who had been architects on Virgin projects with another firm. Founded in 1995, SPF:a's signature designs were more technological than retro, but the mutual trust among the architects, Virgin, and Irvine Johnston secured the job.

"At first, we were looking at this round, neoclassical building and wondering what we were going to do," says Pali. "But more important, it seemed, was that it was a place where the Three Tenors perform and the Stones hold their concerts. It's a building that means music."

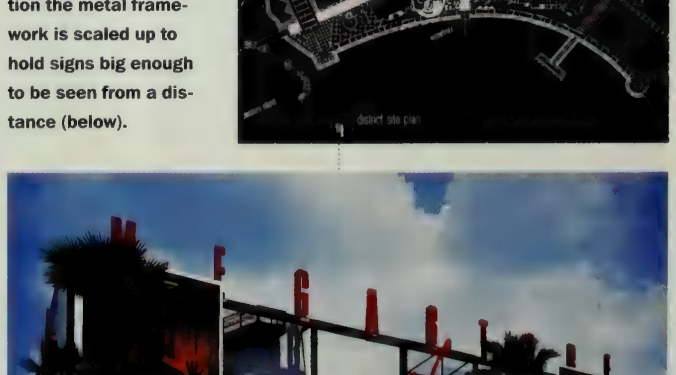
Shax Riegler, based in New York City, writes about design for Metropolitan Home, House & Garden, *and other publications.*

An invaded ruin

Then there was the site. Disney's master plan for the project called for the development of an idealized urban center around a "town square." But this square would be surrounded by such aggressive attractions as the House of Blues, Planet Hollywood, the Wolfgang Puck Café, and Bongo's Cuban Café,



The store's site is within a pedestrianized entertainment precinct (right) but faces parking on its south side. On the southern elevation the metal framework is scaled up to hold signs big enough to be seen from a distance (below).

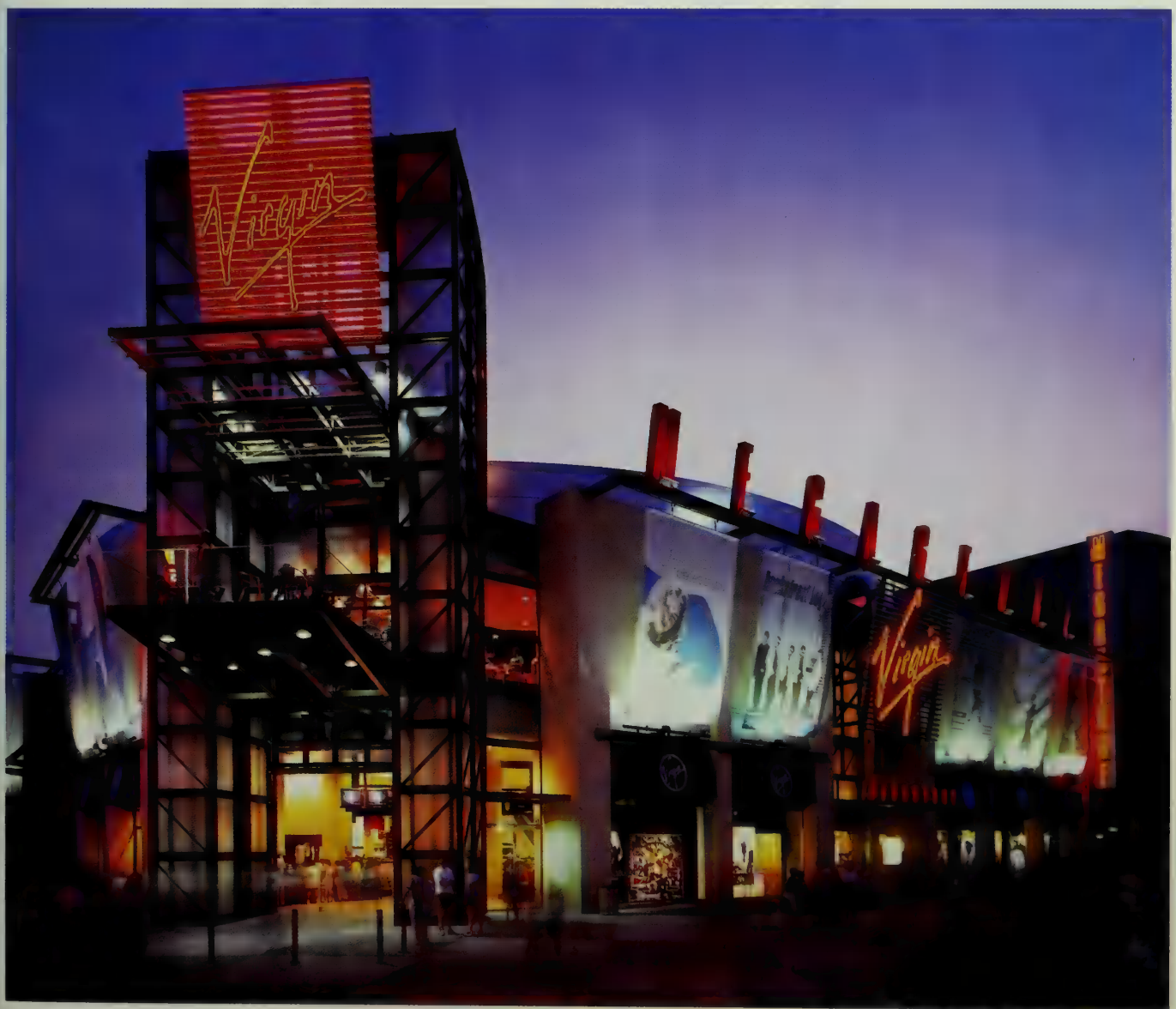


PHOTOGRAPHY © MARK LOHMAN





The original neoclassical idea is suppressed in the final scheme—it's merely a metal-clad cylinder. The truss-columned entrance (far left and below) faces a plaza. The canopy is on stage lifts, offering a live-performance venue. The external steel framing, evoking rock-concert stage technology, becomes a signage armature. The east elevation (left) addresses a multiplex across a narrow street.




VIRGIN RADIO

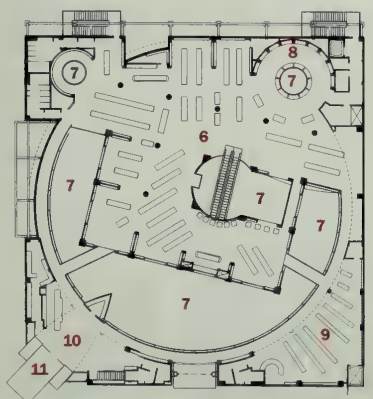




Although the curved forms and building-within-a-building ideas remain, the neoclassical and fantasy-ruin antecedents have largely disappeared. VJ booth (far left) and ground floor (left).



FIRST FLOOR



SECOND FLOOR

1. *Rock and pop*
2. *Jazz*
3. *World music*
4. *Classical*
5. *Video*
6. *Bookstore*
7. *Open*
8. *Magazines*
9. *Children*
10. *Café*
11. *Performance platform*

as well as a 24-theater cinema complex, a Cirque du Soleil performance venue, and the interactive Disney Quest.

Early sketches moved from the initial Albert Hall idea to a Palladian villa. The team members spoke of designing a temple to music, but Disney officials objected to the round plan that was emerging, requesting that the building hold tight to the street adjacent to it in the master plan.

Later the architects asked Virgin to imagine the building as a stone ruin (some stolid London warehouse damaged during the blitz?) that had been invaded and rebuilt by heavily armed "entertainistas." Explains Stenfors, "It's like taking a 19th-century bank, or some other archetypal classical building, and invading it with this rock 'n' roll idea."

Ultimately rock 'n' roll won out. The architects kept the drumlike neoclassical envelope, an icon of solidity, adding stone-clad towers to hold the corners down. They wrapped the exterior with a steel-frame armature, suggesting the temporary quality of rock-concert lighting towers. The pair of truss-work corner columns dominate the southeast side of Disney's plaza. What at first glance appears to be an awning inviting passersby into the store is in fact a movable performance platform. It evokes the temporary stages built for outdoor music festivals.

Shopping as a ride

"Early on we realized, OK, we're in a theme park," says Stenfors. "These people are overstimulated, and the building will have to be a ride." The drama could not end at the door.

The architects brought the stage-house iconography inside, using exposed brick and rough plaster. A high, cylindrical volume opens above the main selling floor. It is crossed by catwalks, like a theater's flyspace. In the center of the curved opening, sitting slightly askew, is a rectangular mezzanine, suggesting an older structure incorporated into the "new" one. These spatial acrobatics, augmented by sound and video, help create distinct selling environments within the 40,000-square-foot space (see plans).

Though the store is a far cry from the Royal Albert Hall, Virgin says it is pleased with its not-entirely-reconciled aesthetic. Its maverick, anti-establishment air is in keeping with Virgin's roots. ■

Sources

Cladding: *Steward-Mellon (stone veneer); Reyno-Bond (metal panel)*
Upward-acting door: *Fimble doors*
Paint: *Devoe*
Resilient flooring: *Forbo Marmoleum*
Signage: *Superior Electrical Advertising*

2 Rocky Ridge Town Center Roseville, California

A PIAZZA, VARYING FACADE HEIGHTS, AND A HIGH-GRADE PALETTE OF MATERIALS MAKE A SHOPPING CENTER SEEM MORE LIKE A CITY CENTER.

by Shax Riegler

Project: *Rocky Ridge Town Center, Roseville, California*
Owner: *Rocky Ridge Venture LLC, Mark Friedman, developer*
Architect: *Mark Dziewulski Architect—Mark Dziewulski, principal-in-charge*
Engineers: *Cole Yee Schubert & Associates (structural); Morton & Pitalo (civil)*
Consultants: *Kelly Design Group (landscape); Dixon Deemer (lighting); Rex Moore (electrical)*
Construction Manager: *Sunseri Associates*

Construction cost: *$72 per square foot*
Rents: *$18–$26 per square foot*

The *Sacramento Bee*'s rave review of the Rocky Ridge Town Center in April 1996 echoed a feeling that had been growing in the suburban community of Roseville, California; soon after the newspaper's review, the local television station went to cover the shopping center. Architecture had become a big story in Roseville. The hook was that architect Mark Dziewulski and developer Mark Friedman had eschewed both the reigning mania for themed plazas and the sterile shoeboxes of the past, instead breaking new ground with a much more architecturally forward design.

Rocky Ridge didn't look like anything the town had seen before, but residents instantly embraced the benefits of the people-friendly complex. "The community was quite excited by it," says Dziewulski. "It was an amenity being offered to them, not just more retail."

A real roadside attraction

The 105,000-square-foot shopping center houses 24 retailers on a typical, straight stretch of suburban road—replete with the usual uninspired strip malls and endless subdivisions on either side of the speedway. The road is well traveled, but the strip malls have little to distinguish themselves from one another.

To make the shopping center less rectilinear in form than other generic commercial buildings nearby and to avoid what could have been another bland box, Dziewulski articulated the facade so that each tenant appears to have a separate building. Tenants occupy spaces that range from 1,500 to 10,000 square feet.

"People have started to identify one section as the Borders Books building," notes Dziewulski, "and the round tower has become the Starbucks Coffee tower. Each form has become identified with a particular tenant."

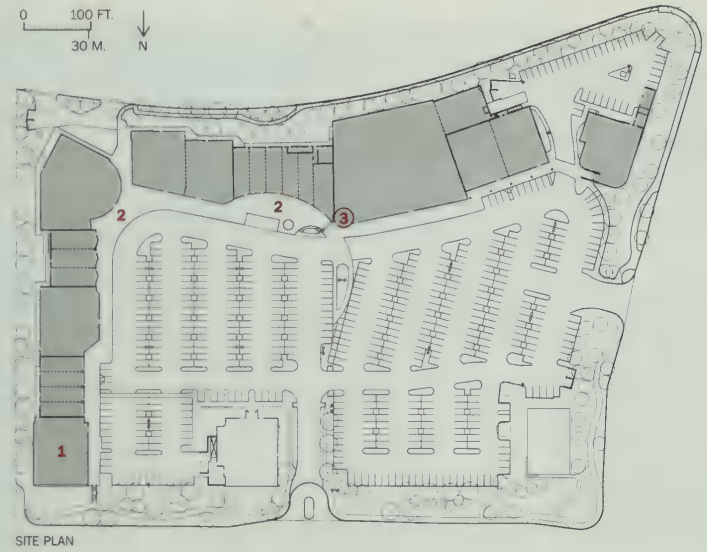
Because it sits far back from the main street, Rocky Ridge as a whole was designed to stand out prominently as a landmark and be easily recognizable from passing cars. Rather than sporting the over-scaled signage typical of strip malls, the structure's roofline is dotted with sculptural forms that people can identify as part of the center. The building speaks for itself. For example, Blockbuster Video is capped by a large tower of translucent panels, which are illuminated at night, making Rocky Ridge's northeastern end recognizable from up and down the main street.

Creating a town center

Another of Dziewulski's priorities was to foster a sense of community among the citizens of Roseville. Before the construction of Rocky Ridge, Roseville—located 20 minutes from downtown Sacramento and a few hours from San Francisco—had no real downtown or



PHOTOGRAPHS © KEITH CRONIN



SITE PLAN

1. *Blockbuster Video*
2. *Piazza*
3. *Starbucks Coffee*

The arced piazza at the Rocky Ridge Town Center, complete with picnic tables, umbrellas, and cantilevered canopies that shade shop windows, was designed to convey the feeling of a town center rather than a strip mall.



Most strip malls are identified by monumental streetside signage. In contrast, Rocky Ridge is distinguished by its architectural forms. The glowing tower atop Blockbuster Video (right), as well as the center's varying building heights, towers, and trellises (opposite), make it easy for passing motorists to spot from the road.







any of the outdoor public spaces that go along with a typical business district, says Dziewulski. While studying other shopping centers in the area, he discovered that people were willing to use any sort of outdoor space to congregate, even if it meant sitting in a place that wasn't specifically designed with seating in mind.

"Unless people wanted to go to a bar and drink beer, there weren't many places to go. In some spaces there was a token table or two and a few chairs," Dziewulski says. "But that was it. So people would sit on planters and walls, since that's all there was." The architect resolved to design comfortable spaces where shoppers could gather at Rocky Ridge.

In addition to several seating areas with café tables and chairs—and even a patch of grass—the main outdoor area, a semicircular piazza, includes a grid of custom-colored concrete paving to create the feeling of a downtown area. "When you enter Rocky Ridge, you can pretend you're entering an old French town—as if you were coming upon a marketplace," says Dziewulski.

An awkward drop of 10 feet from one end of the site to the other was gracefully incorporated into the design of the public spaces, which were broken into smaller areas by a series of two-foot level changes. Saving the cost of grading and building full-height retaining walls enabled the architect to spend more on extras like the furniture, fabric awnings, steel trellises, towers, and stone tiles.

A successful business venture

Because of Rocky Ridge's varied facades and towers, which make it easy to identify from the street, and the abundant space it provides for people to relax and while away the hours, the shopping center is more user-friendly than other local shopping venues. But these qualities also make it a successful business venture. The fact that well-designed spaces will attract customers has not been lost on merchants, who have been willing to pay rents 20 to 25 percent higher than the area average for retail space in Rocky Ridge. ■

Sources

Metal stud walls: *Patco/Semco*
Cement plaster exterior finish: *La Habra*
Built-up roofing: *Schuller Roof System*
Single-ply roofing: *Geoflex*
Aluminum storefront and doors: *Arcadia*
Plastic glazing: *Kalwall*
Door hardware: *Schlage*
Stone tile: *American Olean Tile*
Fabric awning material: *Glen Raven Mills*
Concrete coloring: *Davis Colors*



3 Edwards Business Center Edwards, Colorado

A RETAIL OFFICE PARK DRAWS ON THE COLORS AND FORMS OF THE ROCKIES OUTSIDE AND CREATES WIDE-OPEN SPACES WITHIN.

by Charles Linn, AIA

Project: *Edwards Business Center, Edwards, Colorado*
Owner: *Remonov & Company*
Architect: *Circle West Architects—Peter Koliopoulos, AIA, principal-in-charge; Thomas Bosick, project coordinator*
Engineers: *Monroe & Newell Engineers*
General Contractor: *Shaw Construction—Dave Hall, project manager*

Construction cost: *$6.5 million*
Lease rate: *$15 per square foot*

When architect Peter Koliopoulos, AIA, was designing a combined office, retail, and residential development in Edwards, Colorado, 15 miles west of Vail, it became apparent that there was a large and as yet untapped market for commercial space in the area. "A lot of people who were getting into retailing or a service business for the first time wanted a storefront, or maybe a garage," Koliopoulos says. "But either they couldn't afford to go into the space we were building or it just wasn't what they needed."

People were clamoring for less expensive, "tenant-friendly" space that could serve a broad range of purposes, such as retail, offices, light industry, or warehousing. So Koliopoulos gave the people what they wanted with Edwards Business Center—adjacent to the more upscale Edwards Village Center—completed in June 1997.

Evoking the surroundings

Koliopoulos wanted the colors and shapes of this assemblage to speak to the rugged Rocky Mountain landscape. He selected extremely durable exterior materials that echoed the gray granite and rust-hued, pyrite-bearing tailings outside abandoned lead and silver mines nearby: precast concrete and reddish brick panels for the roof, floor slabs, and walls, and rust-colored steel for columns, stairs, and other details. With precast-concrete exterior walls jutting out of the rocks, the buildings step up the side of the inclined terrain, looking as if they had been pushed out of the ground by the same prehistoric seismic collision that formed the Rockies themselves.

In addition to evoking the surroundings, the precast-concrete building system offered such advantages as low cost and ease of fabrication and construction.

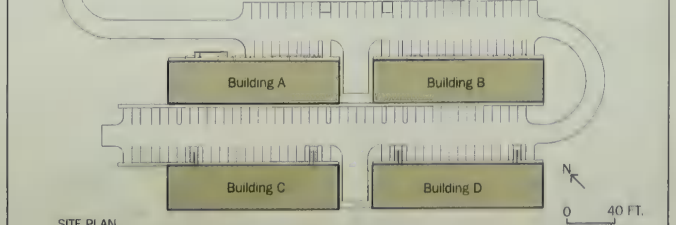
Precast gets the floor

The developer wanted a floor system that would support something as heavy as a car—in case a light-industrial business wanted to move into the second floor. But he also wanted it to span the 50-foot-wide building without needing the support of a forest of intermediate columns that would disrupt the open space below. Since using steel to create a clear span of this size would have sent costs soaring, precast concrete was the obvious choice.

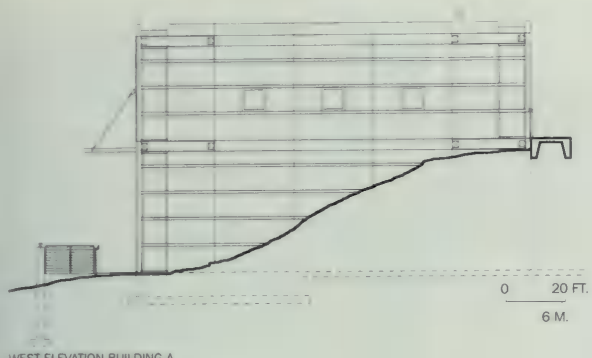
Precast-concrete panels also had the advantage that openings and relief patterns—even brick tile—could be cast in the surface easily and accurately at the factory. The precast fabricator also sent a specialist to spend several days in Koliopoulos's office to help refine the construction drawings.

Construction took place in cold weather—from January to June—when it would have been difficult to work with building systems like concrete block that need warmer temperatures for proper installation. Precast panels can be cast indoors, cured under controlled conditions, and, once ready, can be put up in almost any weather. Similarly, the steel stairs, railings, columns, and other elements could be fabricated indoors and trucked to the site.

"In our detailing of the center,"



SITE PLAN

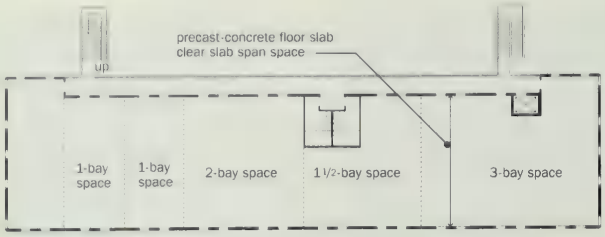


WEST ELEVATION BUILDING A

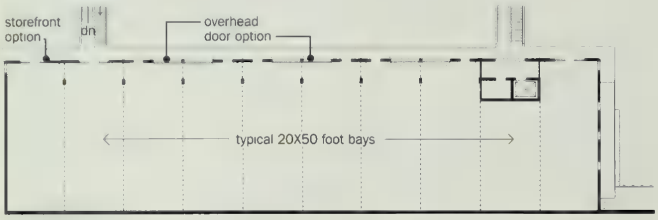


Access to the lower buildings (elevation above and photo right) is from two levels. The first level is entered from the lower parking lot, the second level from the upper parking lot. The second levels of the upper buildings are entered via stairways (below).





SECOND FLOOR—BUILDINGS C & D



FIRST FLOOR—BUILDINGS C & D

N 0 20 FT. 6 M.

The precast-concrete floor system has a 50-foot clear span, leaving the spaces free of columns and easing subdivision (plans). Storefront windows or overhead doors are available (right).







says Koliopoulos, "we were trying to express the dynamic tension between materials, between the steel and the concrete."

Noticeable attention was also paid to the way the various building components fit together. The second-story windows, for example, align with the entry doors and middle section of the storefront on the first floor; horizontal bands in the precast panels align with horizontal mullions in the storefront. Brick-tile diamonds are formed at the same angles as the splayed steel braces welded to the columns elsewhere on the building.

One size doesn't fit all

The long-span capacity of the precast building system is only part of what makes Edwards Business Center practical. Its greatest strength, perhaps, is how it responds to a host of different needs.

The buildings are designed to easily accommodate the varying space requirements of each tenant. The units are 20 feet wide and 50 feet deep, for a total area of 1,000 square feet. Party walls can be placed to give a tenant any multiple of 1,000 square feet in area, with a maximum of 10,000 square feet. Almost all of this space is free of columns.

The panels that form the front elevation of each unit have two openings cut into them. The larger opening can hold either a storefront window or an overhead door, both of equal dimensions. The second, smaller opening, for an entry door and transom, is located to one side of the large opening.

"We could see when we were leasing the shopping center that for some tenants a storefront wasn't as useful as an overhead door," says Koliopoulos. "For example, we have a woodworker who builds furniture in the back of his space and has a showroom in the front. Because he moves furniture and equipment in and out, the overhead door is better for him than a storefront. But people making and selling goods want the storefronts, as do people who have offices."

The architect and the developer's assessment of the market for an affordable, adaptable, and easy-to-build space proved to be accurate: Edwards Business Center was 85 percent sold or leased before the building was complete. ■

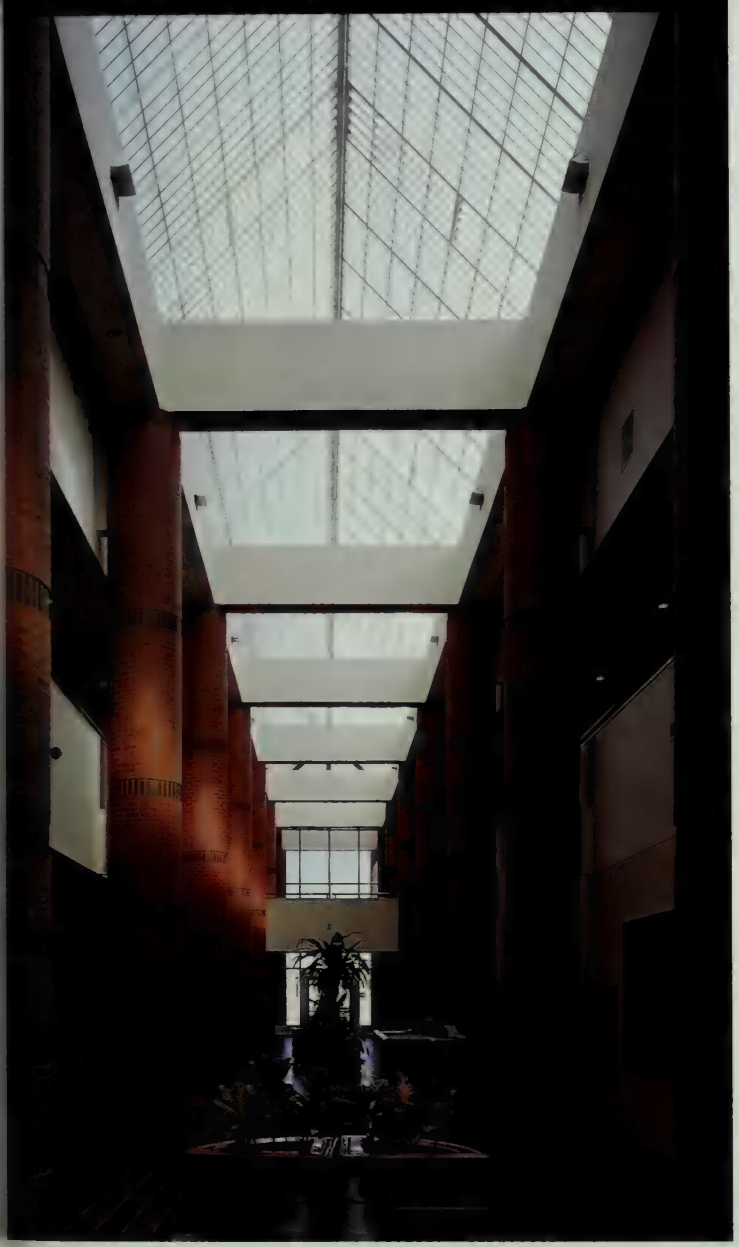
Sources

Precast concrete: *Stress-con*
Tile brick panels: *Stress-con*
Curtain wall: *Kawneer*
Entrances: *Kawneer*
Aluminum windows: *Semco*
Insulated glass: *Pinnacle Glass*
Overhead doors: *Colorado Door Systems*
Hydraulic elevator: *Otis Elevator*
Plumbing fixtures: *Falcon Plumbing*

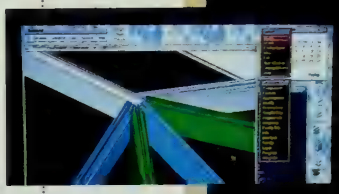
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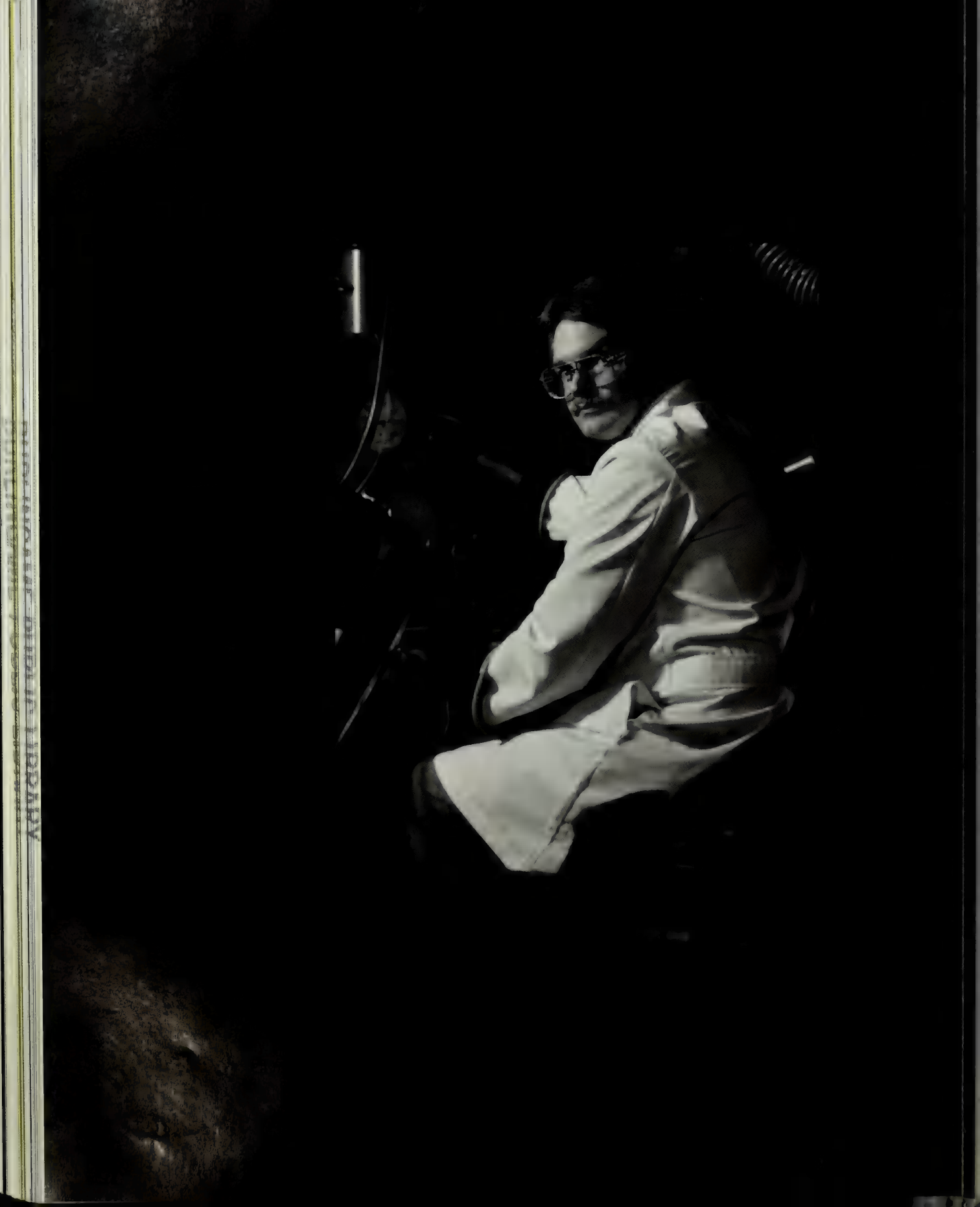
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CIRCLE 42 ON INQUIRY CARD

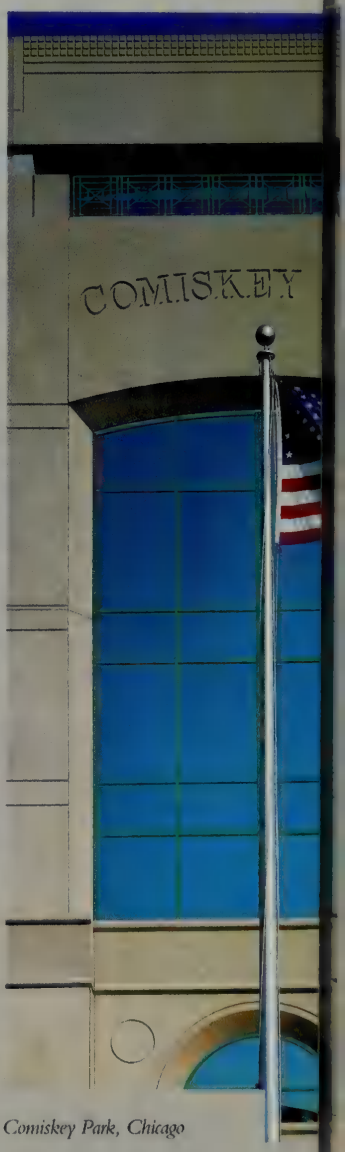
TIME AFTER TIM

Madison Square Garden. Fenway Park. Arrowhead Stadium. The old pros.

The United Center. The Fleet Center. The Alamodome. Camden Yards. Comiskey Park. The rookies. The Astrodome. 3 Com Park *(formerly Candlestick Park)*. The Louisiana Superdome. The seasoned veterans experiencing a renewed vitality.



The United Center, Chicago

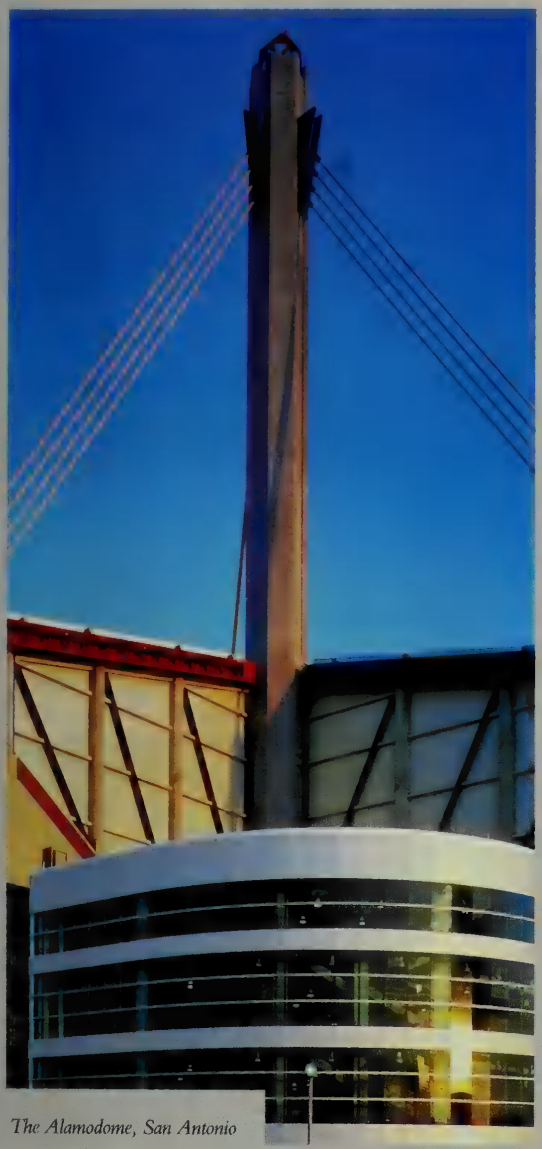


Comiskey Park, Chicago

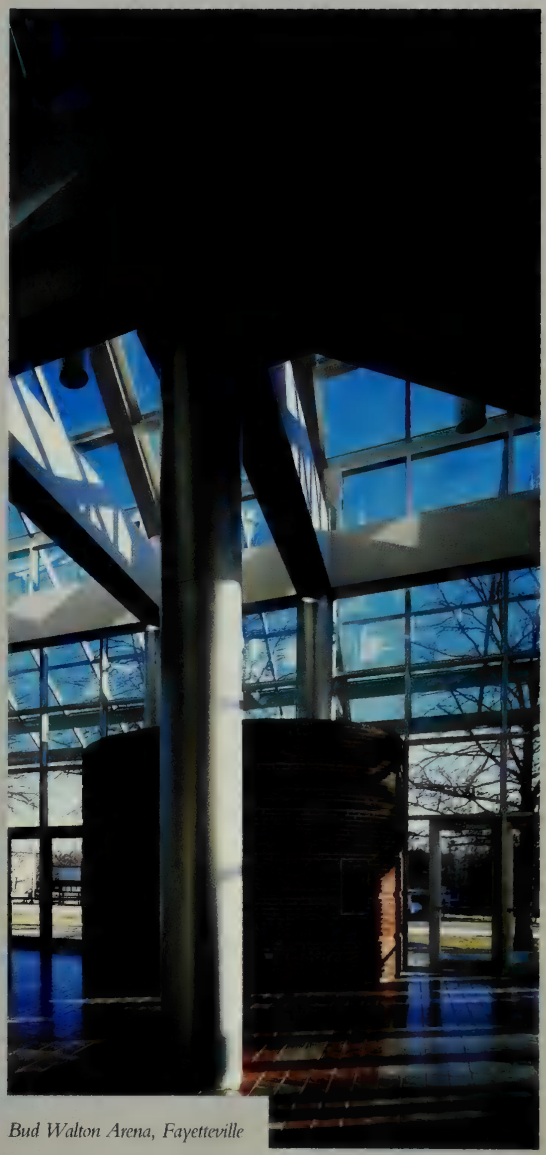
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CIRCLE 44 ON INQUIRY CARD

Designing for Security

SECURITY HAS BECOME A TOP PRIORITY IN BUILDING DESIGN. THE CHALLENGE IS TO MITIGATE DAMAGE WHILE STILL CREATING FRIENDLY ENVIRONMENTS.

by Barbara A. Nadel, AIA

The 1990s marked a flashpoint for architectural design and safety in the workplace. The February 1993 bombing of the World Trade Center in New York City obliterated the American public's sense of immunity to large-scale domestic- and international-terrorist attacks. The April 1995 bombing of the Alfred P. Murrah Federal Office Building in Oklahoma City and the still-unsolved 1996 bombing at Atlanta's Olympic Centennial Park heightened concerns about security in public buildings and spaces. These national tragedies permanently changed the way government and corporate clients locate, plan, and design public facilities. As a result, security will continue to be an essential criterion for planning buildings for the foreseeable future.

Security-design strategies can most effectively minimize the loss of life and property through integrated use of technology, operational policies, and facility planning. Understanding the exact nature of what may threaten a building is important, especially in the early project development phases. From site selection and materials specification to structural systems, every design decision may someday be crucial to saving lives and preventing damage as a result of an attack, accidental explosion, or natural disaster.

Threats, targets, and terrorism

Security design anticipates targets, potential threats, and means of attack. The goals are to protect people, buildings, products, services, equipment, proprietary information, and often possessions and priceless artwork. Most clients prefer not to publicize the threats they receive, unless danger is imminent. Similarly, clients are reluctant to discuss preventive security measures put in place. As a result, the public rarely hears about potential threats unless a disaster occurs. The biggest danger, suggests a former FBI official, may come from loners or small antigovernment groups who can access intelligence information and floor plans on the Internet.

Public buildings are vulnerable to threats, exterior attacks, ballistic missiles, and vehicle bombs—the last being the most destructive and easiest to create. Chemical and biological threats are a growing concern, particularly after the poisonous serin gas attack in the Tokyo subway. Other threats include civil disobedience, mob or individual acts of violence, package bombs, or unforeseeable events such as fires, earthquakes, and gas-line ruptures. Given so many possibilities, security experts admit they cannot predict or prevent all possible scenarios, but they can recommend reasonable and prudent precautions.



Before the Murrah Federal Office Building in Oklahoma City was bombed, no security standards for federal buildings existed.

The bombing of the Murrah building—which left 169 dead, 518 injured, and $100 million in damages—prompted a comprehensive review of security measures for all federal buildings. At the time of the explosion, no security standards existed for federal buildings, says Anthony DiGregorio, senior technical advisor at Applied Research Associates, an Alexandria, Virginia, consulting firm specializing in industrial security and protection. Immediately after the bombing, the U.S. Department of Justice, under presidential directive, developed federal standards on the "hardening" of buildings to explosives and other potential domestic threats based on the findings of the June 1995 report

Continuing Education *This month's installment of the ARCHITECTURAL RECORD/AIA Continuing Education series contains valuable lessons from the federal government's approach to building security. Use the following learning objectives to focus your study. After reading the article, complete the questions on page 182 and check your answers (page 184). AIA members may fill in the self-report form on page 184 and send it in for two AIA Learning Units.*

—Mark Scher, AIA Director Distance Learning

Learning Objectives *After reading this article, you should be able to:*

1. *Summarize the government's five levels of building security classification.*
2. *Explain the GSA's four areas of corrective action for enhancing building security.*
3. *Describe general elements of secure design for buildings with regard to perimeter, entry, interior, and security systems planning; glazing; parking and access; and building systems strategy.*

Barbara A. Nadel, AIA, is principal of Barbara Nadel Architect in New York City, specializing in health, correctional, and institutional planning and design. She is New York State Regional Director on the national AIA Board of Directors.



In 1993, this damage was caused by a bomb-filled truck allowed into a garage under the World Trade Center.

"Vulnerability Assessment of Federal Facilities," known simply as "The Marshals Report." As the principal owner or landlord of the 1,300 federal buildings investigated, the General Services Administration (GSA) was designated to coordinate security standards and cost assessments.

A multidisciplinary team of security experts classified federal buildings into five categories, or levels, based on facility size in square feet, number of employees, and volume of public access. After continued refinement of the draft report through 1997, the GSA Security Design Criteria were accepted as the guidelines for ensuring public safety at all federal buildings. The criteria will likely remain in draft form, because an act of Congress is required to make any changes.

Generally, the larger the facility, the more employees, and the larger the degree of public access, the greater the need for security. Most federal facilities fall into one of the first four levels of safety requirements, from level one, the lowest, to level four. Facilities critical to national security, such as the Pentagon, have the highest possible security classification, level five. A level-one facility, for example, might not require an entry control system, while a level-four facility would require electronic controls with closed-circuit television (CCTV). A small facility with just a few employees and a low volume of public contact may not need much in the way of security, but some measures are required, such as lighting with emergency power backup.

Federal law enforcement agencies often have their own security needs, and the GSA cooperates with them in meeting these requirements. For example, at the request of the FBI, the GSA directed that the bureau's new 306,000-square-foot field office in Washington, D.C., receive facade and structural improvements to provide additional blast protection at a cost of $5.9 million for construction and $1 million for design fees. The total cost for the building was $93.4 million, according to the GSA.

Recommendations for improved security

The GSA's recommendations apply to levels one through four for building design and construction, security systems, operations, and equipment. Design and engineering requirements fall into four general categories of corrective action at perimeters, entries, interiors, and the security planning of the overall facility.

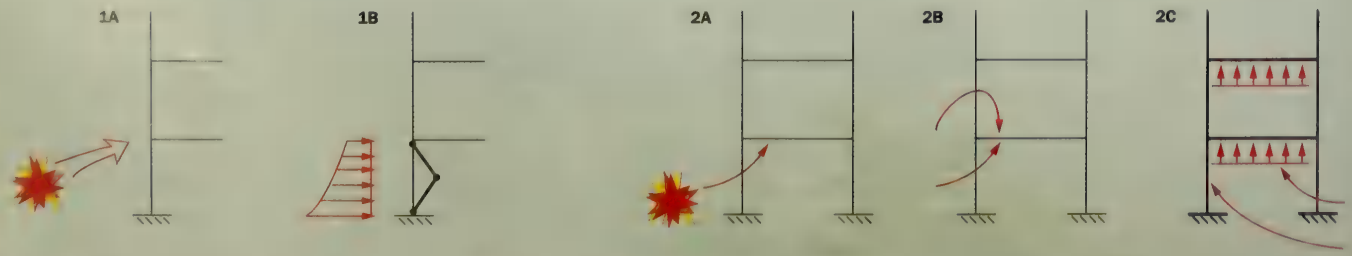
Perimeter security is essential to prevent either a moving or stationary truck bomb attack. The next generation of new federal courthouses, now under design or construction, will integrate landscaping, site planning, and parking controls with more visible security measures, including CCTV monitoring, lighting with emergency backup, and physical barriers or bollards. *Standoff distance* is a term used to describe the limiting of vehicular access through street setbacks.

Entry security is critical at federal courthouses and other facilities containing criminal justice agencies, although individuals may view any building that is a symbol of authority as a target. Thus, the location and design of main entrances, loading docks, mail rooms, and utility mains is of particular concern. At main entrance lobbies, magnetometers, such as those used at airports, and electronic detection devices can identify deadly weapons and explosives.

In recent years, the threat of mail bombs has prompted greater security in mail rooms and more thorough package screening. Loading docks and shipping and receiving areas are also potential targets for larger package explosives or vehicle bombs and are places where an intruder may try to illegally enter a facility. To minimize potential damage, delivery areas should not be located near mechanical areas or underground. Other entry precautions include installing intrusion-detection systems and upgrading current life-safety standards. Many buildings—even in the private sector—now use sign-in procedures for delivery people and packages while limiting their access with CCTV entry controls, secure access to utility mains, and heavy-duty locks at higher-risk facilities.

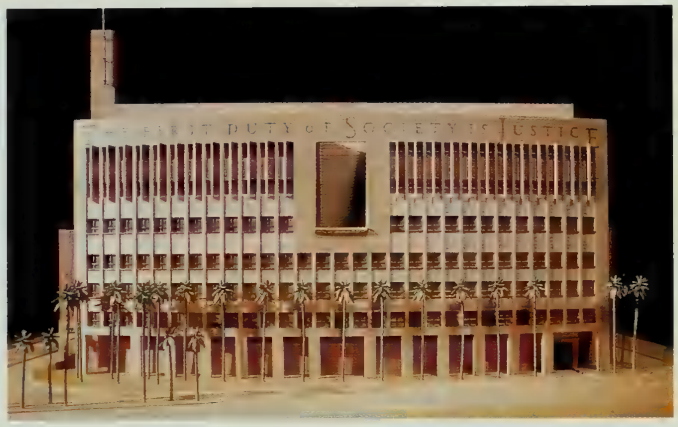
THE EXTRAORDINARY EFFECTS OF BLAST FORCES

An explosion places stresses on a reinforced-concrete building's columns that are completely unlike the horizontal and vertical loads they are normally designed for. Blast forces may result in lateral bending stress on columns (1 A and 1B). This force also applies upward pressure to the bottoms of floor slabs (2A) that is greater than downward loads on them (2B). The net result of these upward forces is that the columns may be in tension at the same time they are subjected to lateral bending forces, and can fail. Concrete columns can be reinforced with steel jackets or by casting steel columns inside them. Spiral reinforcement that confines the core of the column is also beneficial.



SOURCE: ASCE PRACTICE PERIODICAL ON STRUCTURAL DESIGN AND CONSTRUCTION, VOL. 1





A sundeck at a federal courthouse (left) is open only to employees who have cleared security. Large-caliper trees (above) will be planted around this courthouse to prevent cars from coming too close.

Interior security addresses design and construction materials. Street-level retail spaces in government buildings are also carefully evaluated. At the new Ronald Reagan Federal Building in Washington D.C., shops are located on a lower-level arcade near the public spaces and security increases in upper levels of the building.

Other measures include employee identification; controlling visitor circulation; limiting access to building-control centers; and providing emergency power, computer, and phone lines to critical systems. The GSA also evaluates child-care center locations in federal buildings. Future planning will include the hardening of some day-care centers and site assessments to mitigate potential threats by moving them away from high-risk areas.

Security planning includes assessing the specific risks of the various federal agencies—such as the FBI and the Bureau of Alcohol, Tobacco and Firearms. During site selection and planning, consideration is given to whether these agencies belong in an open, multitenant office building or in their own building, located where dangers are minimal.

Paradoxically, there is a fine line between informing design professionals on planning safety design standards and aiding those seeking to circumvent these measures. For that reason, the GSA divulges information about the design criteria on a need-to-know basis to those involved in federal projects. Some architectural firms contacted to discuss how the security measures apply to federal courthouses in various design stages declined to comment or provide photographs, on the advice of the GSA.

The GSA Security Design Criteria

According to Wade Belcher, architect in charge of the security design standards at the GSA Public Building Service in Washington, D.C., "few buildings have been completed with designs based on the security criteria. Many buildings have had components from the criteria included through retrofit projects; however, most have chosen not to disclose what the elements are." Nevertheless, private-sector security experts, architects who specialize in justice facilities, and structural engineers specializing in blast design, who are familiar with the GSA security criteria, can offer insight into security design measures applicable to many building types.

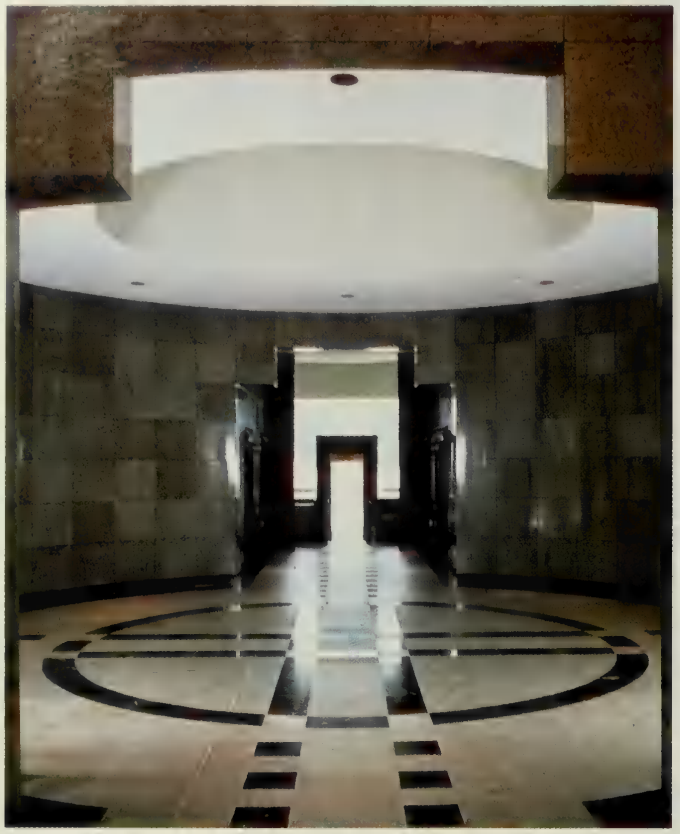
The main goal of the GSA security criteria is to save lives and prevent injury. Secondary goals are to protect federal buildings and assets. The security criteria provide a performance-based approach to various building systems and components, from window glazing to structural systems. In the event of a major terrorist or criminal act, structural, mechanical, electrical, and life-safety criteria are aimed at facilitating safe evacuation and rescue.

These criteria address security concerns while considering cost parameters and acknowledging an acceptance of risk. Officials recognize that federal buildings should not be fortresses or bomb shelters, but rather buildings that are open, accessible, and well woven into the community fabric.

A security-risk assessment is required at the early stage of each federal project. Risk factors may be as diverse as a building's symbolic importance if it is a highly visible landmark or its function if it is considered vital to national interests (such as a national monument, an air traffic control center, or the White House, for example). Other factors to be assessed include the overall effects of an attack, including death and injury, property damage, and workplace interruptions. Costs associated with repairs and replacement are also considered. Designs should allow for the ability to increase security in response to a heightened or temporary threat, such as at a federal courthouse during a high-profile trial. More costly or inconvenient measures, such as prohibiting parking, may be implemented as needed.

Facility planning should follow a tiered defense system, with zones of security starting at the building perimeter and decreasing toward its core. The tiers include the standoff distance in front of the building, building exterior walls, the screening-and-access control area, and safe interior areas for valuable assets. Each building system should support an interdisciplinary approach to mitigate risk and reduce casualties, property damage, and loss of critical functions. Security should be considered in all decisions, from trash receptacle placement to the design of redundant electrical systems. Critical functions and life-safety systems should be located toward the inside of the building, away from the exterior, where they are more vulnerable to explosions.

Parking within the facility should be access-controlled, and surface parking should be controlled with appropriate perimeter barriers; handicap accessibility must be maintained. Magnetometers and X-ray equipment should be integrated into the entrance lobbies. Egress lighting should have emergency power backup. Emergency power units should not be co-located with primary power units, as they were at the World Trade Center, where a single underground explosion disabled both power sources.



State-of-the-art facilities employ fully integrated security systems, like the built-in metal detector in this courthouse atrium.

Physical barriers—bollards, planters, street furniture—should be considered as a means of lending a building added protection where only a minimal setback from the street is available. A given facility's individual security requirements should be considered when deciding whether to limit direct pedestrian and vehicular access to the building. It is essential to evaluate shipping and receiving areas for potential location in a remote area of the facility. The selection of glazing and fenestration materials should be evaluated based on their performance when subjected to lateral forces.

Site and design issues

The creative use of site planning, perimeter definition, sight lines, and lighting can eliminate the need for awkward engineering solutions that might result in less-than-pleasing buildings. "The challenge to architects is to provide an inviting community environment and deal with physical security. These are not contradictory and can enhance one another," says Ed Feiner, FAIA, chief architect for the GSA. "Physical imagery is important. The most successful federal buildings are 'transparent'—the security elements are in place, but they are not visible to the public."

Feiner adds, "The GSA evaluates each potential threat individually. There is no cookbook to solve all problems; every building is different. The security criteria attempt to define how a solution should perform in any given situation, rather than establishing hard-and-fast rules that can't be tailored to specific needs."

Security planning begins during property and site selection. "The GSA prefers sites with some breathing room," says Feiner. "Not a buffer zone—that's for a fortress. Historically, small city courthouses are set on a lawn on a hill, to create an icon with a grand civic presence for the public. The GSA wants to achieve that image and derive security benefits at the same time."

Even in an urban setting, standoff distance is used to address vehicular traffic and reduce the exponential effect of a car bomb. For example, the new Brooklyn Federal Courthouse project included an experimental program to combine art and architecture by inviting artists to work with structural engineers. The goal is to put the best face on necessary security requirements, with less intrusive, visually interesting perimeter security devices, nonstructural elements, and bollards.

Avoid flying glass

The blast at Oklahoma City's Murrah Federal Office Building resulted in many lessons for future construction of federal facilities, especially relating to glazing, life-safety issues, and structural systems, notes Don Porter, AIA, partner at HLW International, in New York City, and project manager for the Brooklyn Federal Courthouse.

Similarly, the explosion at the Khobar Towers, an American military housing compound in Dharan, Saudi Arabia, provided information on how glass shatters during a blast. Window film was scheduled for installation but had not been applied at the time of the explosion. Most of the fatalities in Oklahoma City and Dharan resulted from shards of glass, which flew as far as 100 feet into the building.

The GSA and manufacturers have studied and tested several types of glass, security window film, and other materials under test explosions. Glazing with protective film may be effective in some cases, but blast experts claim that more testing is required to generate conclusive data. "The data is lacking on how best to protect windows and curtainwall construction," Porter says. "There is no empirical data on the effects of blasts and no agreement on what works best—glazing, films, and window frames—especially in retrofits. We can't do a 100 percent job on security—then we'd just end up building a bunker—so there are compromises involved."

Fully tempered glass has some problems with spontaneous failure, but experts say it performs better in a blast environment than float or annealed glass; when shattered, it produces small cube-shaped projectiles with significantly higher breaking strength than pieces of float glass. Laminated glass, which consists of a layer of film laminated between two pieces of glass, tends to stick to the laminating film and stay in window frames when broken. This reduces the number and velocity of flying fragments. During failure, float glass creates large, sharp-edged shards resembling knives and daggers, experts say. For window assemblies to stay in place, the glazing, mullions, and anchors must be able to resist blast pressures enough to transfer loads to the adjacent structure.

"WE CAN'T DO A 100 PERCENT JOB ON SECURITY—THEN WE'D JUST END UP BUILDING A BUNKER."

Courthouse design

Courthouse designers have been addressing issues of enhanced security for state and county projects for a while now. "The federal guidelines raise the requirements to another level. There is no total answer to the best approach," says Don Dwore, AIA, principal and director of the justice facility group at Spillis Candela & Partners, in Coral Gables, Florida. Typically, security comprises 4 to 5 percent of a courthouse project's construction costs, Dwore estimates, and perhaps *(continued on page 196)*



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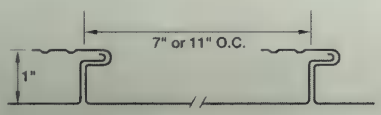
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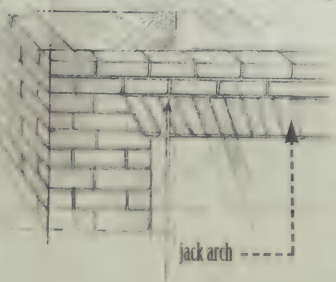
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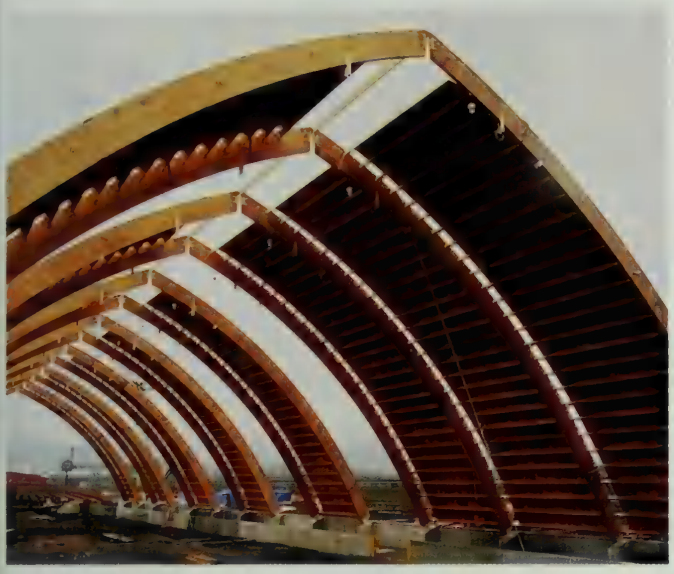
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NEW PRODUCTS



With the increased use of engineered wood products as alternatives to solid-sawn floors and roof-framing materials, the APA–The Engineered Wood Association recently introduced a performance standard for I-joists. Known as APA EWS PRI-400, the standard makes available a uniform product, with consistent product performance, one set of installation instructions, and a trademarking system for inspection, making I-joists easier to specify and less costly. Some manufacturers have embraced the standards; others have not. The next two pages present both sides of the I-joist argument. —*Elana Frankel, New Products Editor*

PREFABRICATED WOOD JOISTS: LEVELING THE PLAYING FIELD

Of the five top I-joist manufacturers, two have jumped on the APA EWS PRI-400 standard bandwagon and three have not. The result has been a turf war between those who want to see the mass acceptance and production of I-joists and those who want to maintain competition through pricing and added services.

When the APA–The Engineered Wood Association (APA-EWA) first began talking about I-joist standards, they asked the top producers to participate. Dennis Huston, Boise Cascade's sales/marketing manager for laminated wood-veneer lumber products, says that although the company has APA-EWA member mills and APA-EWA members on the board, "we found no overriding reason to become part of the product standard."

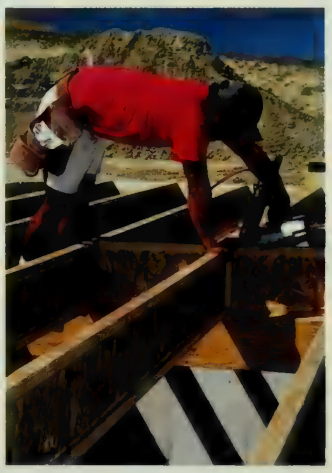
Louisiana Pacific's concern was that the program represented a minority of manufacturers and did not meet the needs of the industry. "We believe there is potential to stifle the growth of product development, a key factor in growing our markets," says Richard Yarbrough, LP's division manager for engineered wood products.

However, Willamette has accepted PRI-400 and recently featured standardized I-joists in a demonstration project house that was displayed at the International Home Builders' Show in Dallas. The project, developed by the APA-EWA, entailed complete framing of a 2,000-square-foot house outside the convention center to show off the benefits of building with engineered wood. It featured Willamette's full product line, including PRI-400 wood I-joists. "The standard simplifies specification and use of I-joists in residential construction, making it easier for architects to include I-joists in their building product mix," says Steve Kilgore, Willamette's engineered wood products general sales manager.

Several factors contributed to Willamette's decision. Especially compelling was a 1995 APA-EWA survey which indicated that 90 percent of home builders support a quality standard for I-joists.

In addition to creating standards, the APA-EWA would also like to represent the industry and be responsible for marketing and working with code authorities for publishing product design values.

"I take very strong exception [to this]," says industry leader Tom Denig, Trus Joist MacMillan's CEO. The industry has grown quickly and established a good track record driven by innovation. Companies have developed new ideas and worked to differentiate their products with added services. With the APA-EWA approach, Denig says, "companies will be less willing to spend money to improve and differentiate products. A standard takes away incentive for marketing, in-field technical assistance, and innovative software to specify products. Industry growth will decline and services to those who handle the products will also decline." ■





The I shape of Trus Joist MacMillan's Silent Floor TJI joists (left) puts the bulk of the wood where it's needed most—in the top and bottom flanges—and can be installed with standard construction tools (above).





Willamette's I-joists (top) subscribe to the APA's PRI-400 standard. Louisiana Pacific's nonstandard joists (above) are structurally engineered to perform better than solid-sawn wood. Georgia Pacific's joist (left) is standard-stamped.

AN ARCHITECT SPECIFIES WOOD I-JOISTS WITH NEW STANDARDS IN PLACE

The Bass Lofts project in Atlanta is a multi-unit housing project that includes the complete conversion of a high school built in 1922, an auditorium added in 1927, and a freestanding gymnasium built in 1948 into 103 loft apartments. The back of the site, an old playing field and parking lot, was reconfigured to hold a new five-story building with 30 one- and two-story apartments, a new parking lot, pool, and park.

According to Dennis Hertlein, project designer and partner in the Atlanta-based architectural firm Surber, Barber, Choate and Hertlein, converting older buildings into loft apartments has always been popular in cities like New York and Chicago, but it's now a hot market for more mainstream developers too. A particular challenge for this project, says Hertlein, was to make the old and new look compatible.

Hertlein was adamant about his desire to build a set of unique apartments and not "standard wood-framed apartments like the kind that are put out all over the place." The developer had similar aesthetics in mind but also had financial concerns. "We could not spend a lot of dollars per square foot," recalls Hertlein. "We had to figure out a way to do it economically and still have the high ceilings, big windows, open floor plans, and multiple stories. The lofts needed open space without walls or columns interfering with the design."

To achieve his goals in the Bass Lofts project, Hertlein relied on Georgia-Pacific's engineered wood products for clear spans. He had specified and worked with engineered wood products on other projects and was confident that they could handle the structural demands of 24-foot clear spans for the flooring and ceiling systems on this project. Hertlein also had environmental concerns that were solved by engineered wood's efficient use of resources and manufacturing techniques. For example, during the manufacturing process, wood components are combined with adhesives to form structural members that maximize the wood's properties; more specifically, I-joists use up to 50 percent less wood fiber in production than conventional lumber joists.

Hertlein was not familiar with the APA–Engineered Wood Association standard when the project started, but he soon learned: "As architects, we have to give parameters to contractors so they can bid a project. The standardization made it easier for us to hand over drawings and get them implemented rather than have to re-spec for different products."

According to Hertlein, standardized I-joists make building more like true wood framing. "The most cost-effective solution is a typical requirement for architects," he says, "and if we are designing and have to choose between the more proprietary or more generic product, we'll choose the more generic. I do proprietary specifying if the product goes above and beyond. But I say, let the free market take its shot."

The Bass Lofts project should be completed next month, and Hertlein estimates that construction costs for each loft, at 950 square feet on average, will come in at $40,000–$50,000. Hertlein says that if engineered wood were not available and a more traditional structural framing metal package were used, it would add about 25 percent to the project's cost. ■

Georgia-Pacific, Atlanta.
800/BUILDGP. CIRCLE 200
Louisiana Pacific, Portland, Oreg.
503-221-0800. CIRCLE 201
Trus Joist MacMillan, Boise.
800/338-0515. CIRCLE 202
Willamette, Albany, Oreg.
541/926-7771. CIRCLE 203
Boise Cascade, Boise.
800/232-0788. CIRCLE 204
APA-EWA, Tacoma, Wash.
253/565-6600. CIRCLE 205



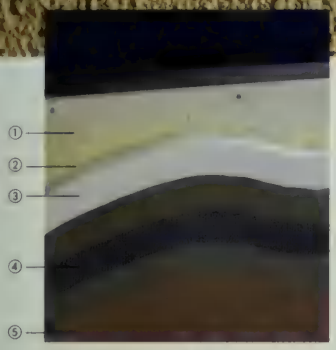






The Bass Lofts at Atlanta's Little Five Points is one of the first multi-unit housing projects to include Georgia-Pacific's newly standardized wood I-joists. The project, shown here in various building stages, includes the conversion of a school into lofts and a new apartment building.

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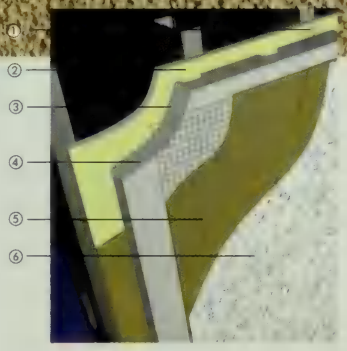
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PRODUCTBRIEFS



▲ Hurricane hold-down

Millibar, which uses DuPont's bulletproof Kevlar as a continuous reinforcing material, can be run from a building's foundation, up the side wall, over the roof, and back down to resist uplift windloads due to hurricanes, tornadoes, or severe storms. The system wraps around new or existing structures to unify connections and strengthen the outer shell to withstand high winds—and even earthquakes and floods. New Necessities, Gainesville, Ga. **CIRCLE 206**

▼ Product versatility

With the added ingenuity of designer Scott Grandis, Sub-Zero was able to show off their products' design flexibility in this Detroit kitchen. The 700 BR two-drawer base unit is shown in the foreground and the 600 series in the background. Each 600 series refrigerator is offered in three exterior designs (overlay, stainless steel, or classic framed) and comes with electronic controls, dual refrigeration, and an ice maker. Though it is shown here in a kitchen application, the 700 undercabinet series can be integrated into a bedroom, bathroom, or family room. Exterior cabinetry can be matched to surrounding units. 800/222-7820. Sub-Zero, Madison, Wis. **CIRCLE 207**





▲ 24-hour concierge

ObjectSoft has contracted with the architectural firm of Eugene Coleman to build customized surroundings for the company's Smart Sign kiosk. Using an ATM-like screen, the 7½-inch-deep interactive terminal stores information on dining, theater, hotels, transit maps, and so forth. The kiosk uses the latest computer hardware. But all those paranoid urbanites can rest assured—it's also vandal-resistant. 201/343-9100. ObjectSoft, Hackensack, N.J. **CIRCLE 208**



◄ AutoCAD driver included

That's one new feature of HP's laserjet 5000 series of B-size printers. Other improvements include more pages per minute, 1200 dpi, and a 10,000-page-capacity toner. 800/LASERJET. Hewlett-Packard, Palo Alto, Calif. **CIRCLE 209**

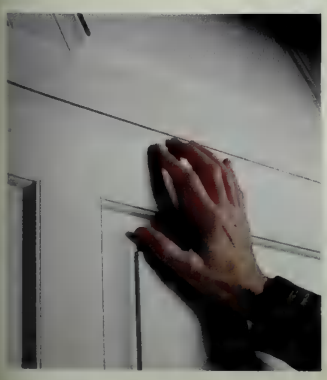
▼ Hit me with your best shot

FireBlock synthetic industrial-surface flooring can withstand repeated blows from hard steel or cast parts and is made from 100 percent recycled nylon. 508/879-1120. Kaswell Flooring Systems, Framingham, Mass. **CIRCLE 210**



▼ Safety by design

The Genesis No-Pinch garage door has a new safety feature: the meeting rails of each section push fingers away so they can't be pinched on the door. 800/4-RAYNOR. Raynor, Dixon, Ill. **CIRCLE 211**





▲ Material archive update

When we last heard from Material ConneXion, the company had approximately 430 companies on its database and 2,600 innovative material samples in its archives. Call for membership information. 212/445-8991. Material ConneXion, New York City. **CIRCLE 212**



▲ A watertight fit

It's estimated that the average American home today contains over 100 Leviton products. These longtime experts on wiring devices have a new and simple innovation: the Raintight While-In-Use outdoor cover, which meets the National Electrical Code and provides seal-tight protection for outdoor applications. 800/833-3532. Leviton Manufacturing Company, Little Neck, N.Y. **CIRCLE 213**

PRODUCTBRIEFS



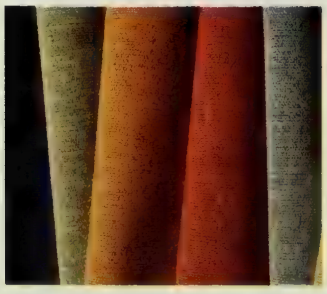
▲ Functional aesthetics

Kudos to Robern's O-hi-O collection of machine-inspired bathroom accessories, designed by David Zelman, which will be included in the Brooklyn Museum of Art's decorative arts collection. One example, the New Paris towel ring, shown, is sculpted out of aluminum, brass, and stainless steel. 215/826-9800. Robern, Bristol, Pa. **CIRCLE 214**

▼ Pleats are in fashion

Here's a sneak peek at Velux's manual pleated shade, available in April. The shade, for use with all sizes of Velux roof windows and skylights, offers an energy-efficient solution for privacy, glare reduction, or heat loss/gain. Choices include a neutral silver-gray for soft, filtered light or translucent black to darken the room. 800/283-2831. Velux-America Inc., Greenwood, S.C. **CIRCLE 215**





◄ . . . and the living is easy

Inspired by the casual, relaxed atmosphere of Scandinavian vacation cottages, Sina Pearson's classic bouclé-textured collection, called Summerhouse, is available in eight colors with black accents. Meets all ACT performance standards and passes Wyzenbeek 50,000 double rubs. 212/366-1146. Sina Pearson, New York City. **CIRCLE 217**

► New, expanded showroom

For 20 years Evanson was tucked away in a hard-to-find downtown Manhattan location. Recently the showroom hauled its commercial and residential furnishings up to the East Side's D&D Building and expanded its business. The Evanson look is about simplicity of form, attention to detail, and luxury of material. Harmony and proportion within each piece are also integral to the total collection. Architect James Evanson and showroom manager Koni Rich are partners in this new uptown space. 212/317- 2030. Evanson, New York City. **CIRCLE 219**





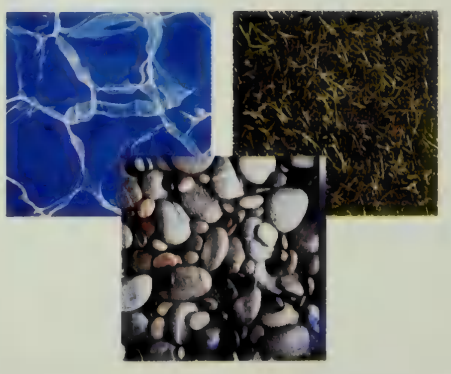
◄ Future filtering faucet

The Moen PureTouch is a faucet and filter all-in-one package that has a replaceable filter cartridge designed by Culligan. For unfiltered water, simply turn on the faucet. To switch to filtered water, just push the button on the faucet's wand. Filtered drinking water is dispensed through a separate channel so it never mixes with unfiltered water. The faucet has a pull-out spout with three spray options—aerated, forceful, or filtered—and the filter carries a 30-day warranty. 800/BUY-MOEN. North Olmstead, Ohio. **CIRCLE 216**

► Mount-a-spout

Concinnity's freestanding, wall-mounted, or lavatory-mounted soap and lotion dispensers are typically designed for bathroom or kitchen applications. For a more luxurious look, though, the wall-mounted dispensers are available with Swaronski crystal details. Spout length for the wall-mounted unit measures 3⅛ inches; for freestanding, 3¾ inches; and for lavatory-, sink-, or tub-mounted, 3¾ inches or 5¼ inches. Available with a solid brass, nickel, pewter, copper, gold, polished chrome (shown), or white powdercoat finish. 800/356-9993. Concinnity, Melville, N.Y. **CIRCLE 218**





▲ Nature's bounty

Made from all-natural materials, Imagine Tile's latest series, called Mixed Stone, Water, and Grass, is available as a floor or wall tile in regular (glossy) or slip-resistant (matte) surfaces. The slip-resistant surface has a Class IV+ rating by independent testers Smith-Emery Labs and is suitable for heavy-duty commercial foot traffic, indoor or outdoor. The tiles are also frost- and chemical-resistant, waterproof, unaffected by UV light, and resistant to thermal shock. A full line of coordinating field tile is available. Grouting can be as thin as 1/10 inch in any color available from an installer. 800/680-TILE. Imagine Tile, Jersey City, N.J. **CIRCLE 220**



Before you specify a toilet this year, read what the people of San Simeon did with theirs

They threw them out - all 1,198 of them - and put in low-consumption toilets with Sloan's FLUSHMATE® inside. Their conclusion was FLUSHMATE pressure-assist toilets would solve their water shortage problems better than gravity-type low-consumption toilets. Here's what they found out.

A FLUSHMATE-equipped toilet, using only 1.6 gallons of water per flush, clears the bowl in one flush by using waterline pressure instead of gravity. FLUSHMATE-equipped toilets have the largest trapway available, so they are less likely to clog. In addition, they have a large water-surface area like older "water-guzzling" models, so they keep the bowl cleaner.

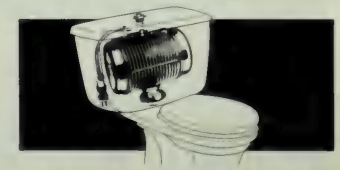
By comparison, new gravity-type, low-consumption toilets may require double flushing, clog easier and require frequent brushing. They simply may not perform to the level you have come to expect.

The rules have changed. Since 1994, the law requires all new toilets for the home to use only 1.6 gallons of water per flush (about half of what most people have been using). If you think you need the performance of FLUSHMATE, or would like to learn more about pressure-assist toilets, call us at 1-800-875-9116 and we'll send you our FLUSHMATE Master Specification Guide.

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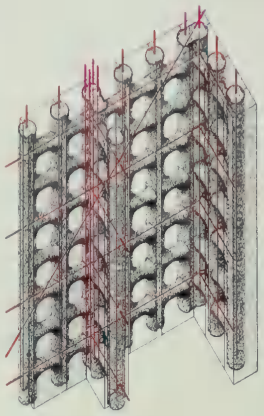
CIRCLE 53 ON INQUIRY CARD



PRODUCT BRIEFS

▸ Environmentally friendly

Rastra building elements are story-high wall units, 15 to 30 inches wide, that can be vertically or horizontally installed. Cavities inside the unit are grouted with concrete for stability. Thastyron, the raw material used to mold the units, is mixed out of cement, water, and recycled plastic foam. This provides good insulation, heat retention, and vapor transmission. Rastra is very lightweight (no need for cranes) and fireproof. 888/RASTRA5. El Paso. **CIRCLE 221**





▴ Elegantly floored

Amtico has introduced three new designs to their Motif collection of vinyl flooring products. One example, Regal, shown, measures 36 inches square. 888/268-4269. Amtico, Atlanta. **CIRCLE 222**

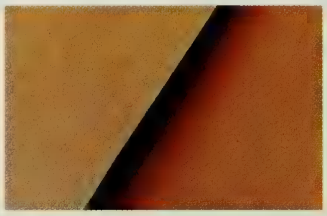
▾ Folding casement crank

The concept for Pella's latest gadget, the folding casement crank, came from customers' frustration with traditional protruding cranks that interfere with shut blinds or drapes. 800/84-PELLA. Pella, Pella, Iowa. **CIRCLE 223**



▾ No-slip underfoot

Assurance is a new line of slip-retardant resilient flooring in 12 inlaid colors from Mannington Commercial. Patent-pending wearlayer technology provides traction under wet and dry conditions. Available in six-foot widths. 800/241-2262. Mannington, Salem, N.J. **CIRCLE 224**



▴ Blooming veneer prints

Tulipwood (left) and magnolia (right) are two new veneer prints of decorative laminates from Lamin-Art. Both designs have a simple, straight grain that weaves slightly with the subtle color. Some application possibilities include use in retail stores, health-care facilities, hospitality designs, or exhibit spaces. 800/526-4627. Lamin-Art, Elk Grove Village, Ill. **CIRCLE 225**





◂ Pure protection

InPro Corporation's latest introduction of wood-grain tones to the vinyl Woodland Group of door and wall protection includes Natural Maple, Santa Rosa Oak, Chatsworth Oak, Crystal Oak, and Boston Cherry. The finishes incorporate matching base colors to ensure integrated color throughout the products while also concealing scratches and dents. Accent strips are also available on selected guardrail and wall-guard products. 800/543-1729. InPro Corporation, Muskego, Wis. **CIRCLE 226**

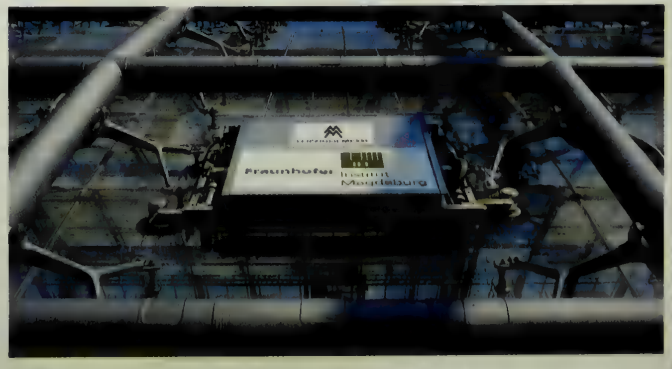


▴ Prefinished patio doors

Therma-Tru's fiberglass hinged patio doors are prefinished with a white exterior and oak-grained door panels. The interior can be stained or painted to match the decor. New profiled grilles between the glass make for easier cleaning. The doors are available in full height, replacement height, or eight feet tall. Backed by a lifetime warranty. 800-THERMA-TRU. Therma-Tru, Maumee, Ohio. **CIRCLE 227**

▾ Reach new heights

With a new generation of service robots conquering the market, the latest fully automated cleaning system for outdoor facades is now available through the Fraunhofer Technology Center. No detergents are used for cleaning, only high-pressure water. The company claims that its intention is not to replace the traditional window cleaner with the 2½-by-2½-foot robots, but to use the equipment for dangerous or difficult-to-reach areas. On the grounds of the Leipzig Trade Fair, in Germany, the robots clean the vaulted glass hall, shown, which measures 800 feet long and 265 feet wide. 305/863-9096. Fraunhofer Technology Center, Hialeah, Fla. **CIRCLE 228**





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IMPROVING PERFORMANCE WITH NEW FORMS AND MATERIALS [shaped ski and pump shoe]
THE FORMAL DESIGN of FESTIVALS [the Olympic Games] DESIGNING for DISABILITIES + CAPABILITIES [mono-ski + racing wheelchair]
FORMS FOR RITUAL & TRADITION [Sumo Wrestling] THE ETHICS of DESIGNING THE BODY – THE AESTHETICS of ATHLETICS
BETTER PERFORMANCE WITH BETTER THEORY [Biomechanics and the physics of the curve ball]
FAILURE AND SUCCESS IN DESIGN [the bike that was so successful it failed] DESIGNING INSTRUMENTS of MEASUREMENT
DESIGNING THE SPORTS LANDSCAPE – THE STREET as A PLAYING FIELD – KEEPING GEESE OFF the GOLF COURSE
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PRODUCTLITERATURE



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Now available from the Lester L. Brossard Co. is a six-page product brochure featuring safety and security mirrors. Highlighted in the brochure is Brossard's line of convex mirrors, dome mirrors, fork-lift mirrors, flat mirrors, and CCTV housing domes. A complete product-selection guide is also included. 815/338-7825. Lester L. Brossard Co., Woodstock, Ill. **CIRCLE 229**

NRCA's 1998 releases

Among the National Roofing Contractors Association's latest editions is "Residential Steep-Slope Roofing Materials Guide," a 220-page guide on asphalt shingles; underlayer sheets; clay and concrete tile; wood shakes and shingles; slate; and fiber cement, metal, and synthetic roofing products. Also available is "Commercial Low-Slope Roofing Materials Guide," a 700-page report on low-slope membranes, cements, coatings, insulation boards, and roof fasteners. 847/299-9070. National Roofing Association's Education Department, Rosemont, Ill. **CIRCLE 230**

A variety of Pemko products

The new catalog includes information on thresholds, sills, door bottoms, weatherstrips, FireGlaze, continuous hinges, metal/oak molding and trim, and sliding-door hardware. 805/642-2600. Pemko, Ventura, Calif. **CIRCLE 231**

Commercial roofing

Firestone Building Products is a single source for commercial roofing systems, customer service, technical support, and warranty information, all in a 24-page color brochure. 800/428-4442. Firestone, Carmel, Ind. **CIRCLE 232**

Fire-alarm videos

Protection Knowledge Concepts has introduced a four-video series developed by the fire-protection engineering consultants at Rolf Jensen & Associates. Designed to provide basic knowledge on complex fire-alarm systems for specifiers and buyers, the tapes cover initiating and notification devices, control units and their design, and care and maintenance issues. Each tape runs 20–25 minutes. The total cost for the four-video series is $399. 888/831-4RJA. Protection Knowledge Concepts, Chicago. **CIRCLE 233**

Architectural metals

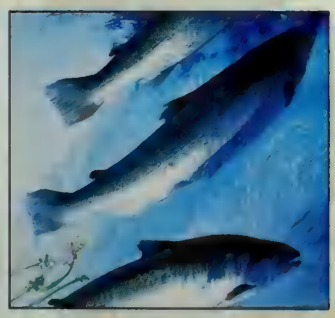
Southern Aluminum Finishing's designer guide for Division 7 architectural metals covers roofing products that are marketed through the company's perimeter-systems division. Also included are scaled product drawings, material recommendations, and sizing data and specifications. The SAF Web page, called the Aluminum Spec Center, can be found at www.saf.com. 800/334-9823. Southern Aluminum Finishing, Sanford, N.C. **CIRCLE 234**

For more information, circle item numbers on Reader Service Card

Everybody...







It's true for owls, murrelets and salmon and it's true for people, too. The Pacific Lumber Company is working hard to strike a balance that will preserve old growth redwoods, protect wildlife and still produce the building materials our nation needs.

On September 28, 1996, our company reached an agreement with the State of California and the federal government to save the old growth redwoods known as the Headwaters Forest. This agreement is a "win-win" for all parties involved. It adds approximately 3,300 acres of old growth forests, and a 4,200 acre buffer zone, to the existing 350,000 acres of redwoods already preserved in parks and public reserves. The agreement would bring the total of redwoods preserved by The Pacific Lumber Company over the years to 25,600 acres, and it would leave us with the ability to grow and harvest redwood on a sustained-yield basis.

On November 14, 1997, President Clinton signed the Interior Department's appropriations bill that includes the federal government's share of the funding for the Headwaters agreement. California must now fund its financial share. For this to happen, Governor Pete Wilson needs to include the funding in his budget request and the state legislature needs to approve the appropriation.

This agreement will protect wildlife. It states that Pacific Lumber establish a Habitat Conservation Plan to assure that the wildlife on our remaining property will have sufficient food and cover. We have also submitted a Sustained Yield Plan that monitors the growth and harvest rate of our forest in 10-year increments over a 120-year period.

If you are interested in the details of the Headwaters Agreement and our efforts to preserve this forest, visit our internet site at www.palco.com. If you have any questions, write to us; we would like to answer them.

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Zero effect

Information about Zero's complete line of door and window gasketing, thresholds, saddles, and continuous hinges is now available for 1998. The 36-page color catalog provides spec guidance and full-size schematics for components and integrated systems for blocking flames, smoke, air, light, and sound. 800/635-5335. Zero International, Bronx, N.Y. **CIRCLE 235**

Designer glass film

Outwater Plastics has recently updated Illusions, a line of designer glass film, and has now released its 1997–99 catalog to include the expanded format of the original series as well as other related products. Originally created as an alternative to etched glass, the film will not discolor and helps prevent glass from shattering. 800/631-8375. Outwater Plastics, Wood Ridge, N.J. **CIRCLE 236**

Furniture for architecture

Geiger Brickel's electronic corporate overview and catalog is available on the Internet at www.geigerbrickel.com. Browsers can review the company's history and compare contract office furniture designs. Bound and printed copies of the catalog are also available. 800/444-8812. Geiger Brickel, Atlanta. **CIRCLE 237**

Window technology on CD-ROM

The Windsor Window Company has developed a CD-ROM that helps to increase architects' design efficiency and provides a wider range of window options. The Architectural Reference Disc has 600 pages of detailed specifications, performance data, cross-sections, and evaluation details for Windsor products, including more than 3,000 drawings. The CD-ROM also allows designers to import window elevations and specifications into CAD drawings. The company plans to update the CD-ROM every 12 to 18 months. 515/ 223-6660. West Des Moines. **CIRCLE 238**

Fittings and fixtures

TOTO USA, a single-source manufacturer of plumbing fittings and fixtures, has recently introduced a free 16-page catalog featuring its Reliance Commercial Line. 800/350-8686. Morrow, Ga. **CIRCLE 239**

Luxury bathrooms

Duschqueen, a fabricator and installer of frameless tub and shower enclosures, is expanding both its product offerings and its base of operations. Along with its 16-page, full-color catalog of frameless enclosures for 1998, the company provides information about a new line of solid brass-framed enclosures. 800/348-8080. Wyckoff, N.J. **CIRCLE 240**



For more information, circle item numbers on Reader Service Card



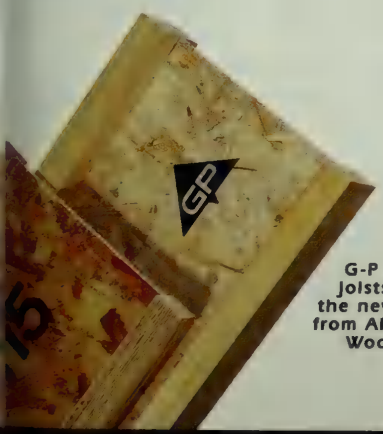
Location courtesy of Hallmark Homes, Scott Koehn, builder, Atlanta, GA.

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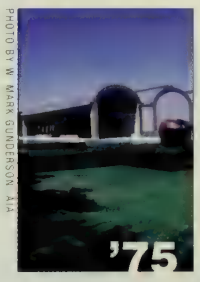


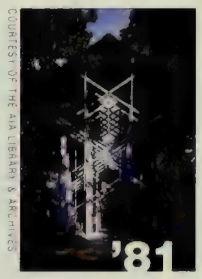
"... we are exploring different ideas which are current because from one year to the next, the cultural environment changes perceptibly, subtly but perceptibly. So one is influenced by emerging ideas and changing values."

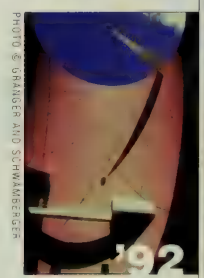
KEVIN ROCHE, FAIA, *from* KEVIN ROCHE, *Rizzoli, NYC, 1985.*

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SUBMISSION DEADLINE: 09/04/98

Institute Honor Awards for Interior Architecture
ENTRY DEADLINE: 08/21/98
SUBMISSION DEADLINE: 09/18/98

Institute Honor Awards for Regional and Urban Design
ENTRY DEADLINE: 09/11/98
SUBMISSION DEADLINE: 10/09/98

The Twenty-five Year Award
SUBMISSION DEADLINE: 09/04/98

For more information or to receive a call for entry, please call the AIA Honors and Awards Department at (202) 626-7586.

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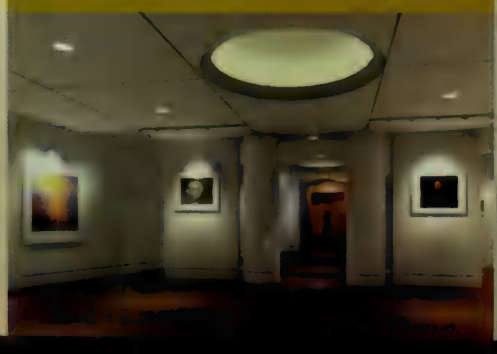
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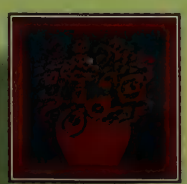












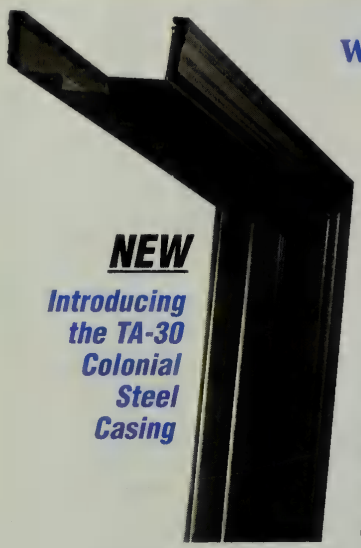
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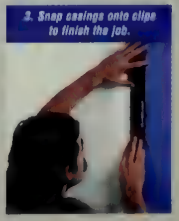
1. Sleeve Timely frame over finished wall.



2. Hang premachined door, adjust and fasten to wall.



3. Snap casings onto clips to finish the job.



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CIRCLE 70 ON INQUIRY CARD

(continued from page 54)

Finnish Modern Design: Utopian Ideals and Everyday Realities, 1930–1997
New York City
Through June 28
Featured in the exhibition are glass, ceramics, furniture, textiles, metalwork, and industrial design. Organized by the Bard Graduate Center for Studies in Decorative Arts and the Museum of Art and Design in Helsinki. Bard Graduate Center. 212/501-3000.

Breaking Through: The Creative Engineer
Washington, D.C.
Through November 8
An exhibition that examines the role and process of creativity in the field of engineering through a series of case studies. National Building Museum. 202/272-2448.

Environmental Design Research Association Conference
St. Louis
March 4–8
The theme of EDRA's annual conference is "People, Places, and Public Policy." Research and design projects will be presented in papers, media presentations, and other formats. Design educators and professionals, planners, social scientists, and others interested in the relationship between people and places are invited. Contact EDRA, P.O. Box 7146, Edmond, Okla. 73083; 405/330-4863; or visit www.aecnet.com/EDRA.

Ten Young Dutch Architectural Practices
Los Angeles
March 9–April 5
A large-scale exhibition of experimental built projects by young Dutch architects, including Wiel Arets, Rianne Makkink, and Lars Spuybroek, who will also be participating in a lecture series. Southern California Institute of Architecture. 310/574-1123.

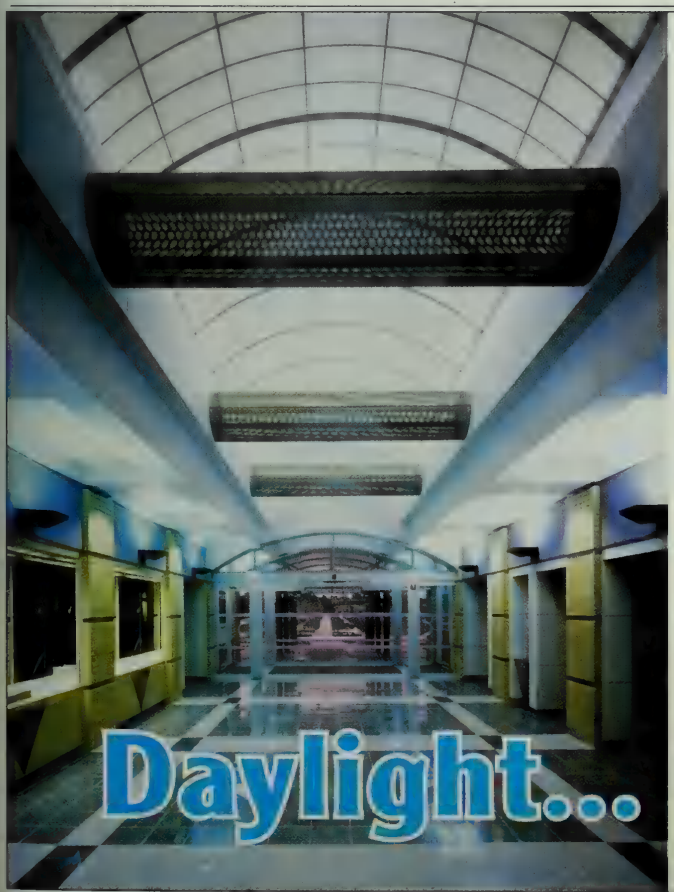
Preservation of Historic Bridges
Boston
March 10–11
This seminar, sponsored by the American Society of Civil Engineers, is intended to bring preservationists and bridge engineers together to teach them about each other's concerns and problems. Case studies will be presented. The seminar will also be held in Chicago, April 7–8. Contact ASCE Continuing Education, P.O. Box 830, Somerset, N.J. 08875; tel. 800/548-2723; fax 703/295-6144; or E-mail conted@asce.org.

Peter Cardew: Ordinary Buildings
Toronto
March 10–April 19
Drawings, models, and a photographic analysis of projects by the Canadian architect. Design Exchange. 416/363-6121.

New Chicago Architecture
Chicago
March 10–May 31
The latest work by Chicago architects will be on display after having been exhibited at the São Paulo Bienale. Chicago Athenaeum. 312/251-0175.

Archigram, 1961–1971
New York City
March 12–April 25
The conceptual work of the celebrated British architectural collaborative will be on view at the Storefront for Art and Architecture (212/431-5795). Speaking events at the Pratt Institute and the Thread Waxing Space complement the exhibition. Call 718/399-4304 for information.

(continued on page 178)



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21st Century

East Columbia Library, Columbia, MD Architects: Grimm & Parker

CIRCLE 71 ON INQUIRY CARD

(continued from page 177)

Towards Transformation: Judith Turner
Miami Beach
March 14–May 10
An exhibition of 72 photographs of important buildings in modern architecture. Florida International University. 305/348-3181.

WestWeek
West Hollywood
March 18–20
The theme of the 23rd annual architecture and interior design conference is "To Live and Design in L.A." The three-day event includes new product introductions, symposia on design issues, and guided design tours. Pacific Design Center. Visit www.p-d-c.com. for information and registration.

NeoCon West
Los Angeles
March 19–20
NeoCon, the annual Chicago-based trade show, is adding a West Coast version, which it is positioning as a regional event. Products and services for all types of commercial interiors will be presented. Los Angeles Convention Center. Call 800/677-6278 or visit www.mmart.com.

International Tile and Stone Showcase
Los Angeles
March 19–20
The showcase will feature West Coast distributors, wholesalers, and importers of tile and stone. Los Angeles Convention Center. Contact ITSS, 900 E. Indianatown Road, Suite 207, Jupiter, Fla. 33477; tel. 800/881-9400; fax 800/883-9466.

Corrosion/98
San Diego
March 22–27
"Corrosion/98," the 53rd annual conference of NACE International, will focus on corrosion and corrosion control of reinforced-concrete structures. Call NACE International at 281/228-6223; or visit www.nace.org.

BOCA International Spring Meeting
Atlantic City, New Jersey
March 23–25
Building Officials and Code Administrators International will hold its 1998 Code Development Hearings during this three-day event. A full day of training seminars is also planned. Fax-on-demand, 708/799-2300 x500, for registration and hotel reservations. To obtain copies of the hearing documents, call 708/799-2300 x340.

The Making of South Asia
Pittsburgh
March 28–July 19
The work of four South Asian architects—Charles Correa, Achyut Kanvinde, Balkrishna Doshi, and Muzharul Islam—is included in this traveling exhibition. Heinz Architectural Center, Carnegie Museum of Art. 412/622-3131.

Landmarks of New York III
New York City
March 31–July 7
A photographic exhibition in celebration of the city's centennial, accompanied by a symposium, walking tours, and panel discussions with such participants as Herbert Muschamp, Denise Scott Brown, Richard Meier, and Charles Gwathmey. New-York Historical Society. 212/861-4641.

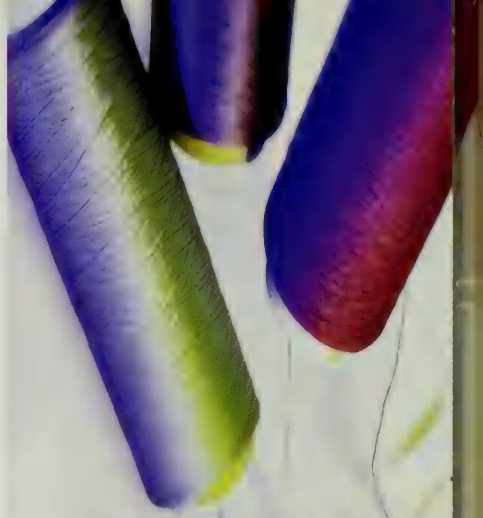
Atlantic Builders Convention
Atlantic City, New Jersey
April 1–3
This year's convention will be the biggest yet, with 500 exhibitors from all the mid-Atlantic states. Events, seminars, and networking and evening socials will be included. Atlantic City Convention Center. For information about tickets and exhibition space, call Joy Miccio at 609/587-5577.

CIBSE National Lighting Conference
Lancaster, England
April 5–8
The Chartered Institution of Building Service Engineers' biannual lighting conference will feature papers by British and non-British participants, giving it an "international dimension." University of Lancaster. Call 44/181/675-5211 for further information.

Art and Architecture Symposium
Marfa, Texas
April 25–26
A symposium on the integration of art and architecture, with participants Robert Irwin, Frank Gehry, Claes Oldenburg, Jacques Herzog and Pierre de Meuron, James Ackerman, and others. Chinati Foundation. 915/729-4362.

1998 AIA National Convention and Expo
San Francisco
May 14–17
Twelve thousand industry professionals are expected to attend this year's convention at the Moscone Convention Center. For information about exhibiting, call 617/859-4483. For other information, call the AIA at 202/626-7395 or check the convention Web site at www.aia98.org.

(continued on page 180)


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CIRCLE 72 ON INQUIRY CARD

Installation photographs © Chas McGrath; carpet photo ■ Don Rank.

(continued from page 178)

Competitions

Italian Ceramic Tile
Submission deadline: March 15
Assopiastrelle, the Association of Italian Ceramic Tile and Refractory Manufacturers, announces its 1998 design award competition. The $5,000 prize recognizes designers or architects who have created innovative settings using Italian ceramic tiles. Projects must be completed by February 28. Write Abbate Communications, 222A Sixth Avenue, 2nd floor, Brooklyn, N.Y. 11215; or call 718/783-3160.

Van Alen Prize: The East River
Registration deadline: April 8
Submission deadline: May 20
The 1998 Van Alen Prize in Public Architecture calls for entries that investigate, envision, and promote the design of a better public realm for New York City's East River. Entrants may propose design ideas from the vast scale of the entire district to the minute scale, as long as the proposal is conceived as having an impact on the East River's identity in the city. Students, studios, faculty, and professionals from anywhere in the world may enter. Contact the Van Alen Institute, 30 West 22nd Street, New York, N.Y. 10010; fax 212/366-5836; or E-mail vanalen@vanalen.org.

Burnham Prize
Registration deadline: April 14
Portfolios due: April 28
The Chicago Architectural Club's biannual competition recognizes work by recent architecture school graduates under forty years of age or those who received their degrees after January 1, 1988. Open only to residents of Wisconsin, Minnesota, Iowa, Missouri, Michigan, Ohio, and Indiana. The winner of the prize will receive a three-month fellowship at the American Academy in Rome during the fall of 1998. Call Alan Armbrust at 847/381-2946 x236 for further information.

Development of the Al-Riyadh District
Submission deadline: April 22
Al-Dar Real Estate Investments has announced an international architecture and urban design competition, with professional and student categories, to develop residential accommodations for Muslim pilgrims in the Al-Riyadh District, Makkah, Saudi Arabia. The design for the 3,500-square-meter site should be sympathetic to natural and environmental factors, fulfill the requirements of the pilgrims, and recall the local architectural and urban fabric. First prize for professionals is $50,000; for students $4,000. Contact Salihiyya Center, Office 702, King Abdul Aziz Street, P.O. Box 17871, Jeddah 21494, Saudi Arabia; tel. 966/2/644-4690; or E-mail aldar@mail.gcc.com.bh.

Vital Signs Student Competition
Submission deadline: June 15
The Vital Signs Project, administered through the University of California, Berkeley, announces its 1998 Student Case Study Competition. Undergraduate and graduate students in ACSA member schools of architecture and ABET member schools of architectural engineering in the United States, Canada, and Puerto Rico are asked to investigate, measure, evaluate, and report on the performance of existing buildings. Contact Gail Brager, Vital Signs, UC Berkeley, Berkeley, Calif. 94720; E-mail vitalsigns@ced.berkeley.edu; or visit www.ced.berkeley.edu/cedr/vs/act/act_main.html.

Please submit information for exhibitions, conferences, and competitions at least six weeks prior to the magazine's publication date (i.e., April 15 for the June issue).



CIRCLE 73 ON INQUIRY CARD

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INSTRUCTIONS

- Read the article "Designing for Security" (pages 145–48) using the learning objectives provided to focus your study.
- Complete the questions below, then check your answers (page 184).
- Fill out the self-report form (page 184) and submit it to receive two AIA Learning Units.

Questions

1. Give an overview of the GSA Security Design Criteria derived from the Marshals Report.

2. Explain the four general categories for facility design and engineering security requirements.

3. Describe what rudimentary security assessments should be made early in a public project.

4. Describe the security lessons that were learned from the damage and problems experienced in the World Trade Center bombing.

5. List two types of glass that reduce the number and velocity of flying fragments in a bomb blast and discuss what is needed for strong window assemblies.

6. Describe two general approaches to blast-resistant design and a three-pronged approach for protecting security, telecommunications, and electrical systems.



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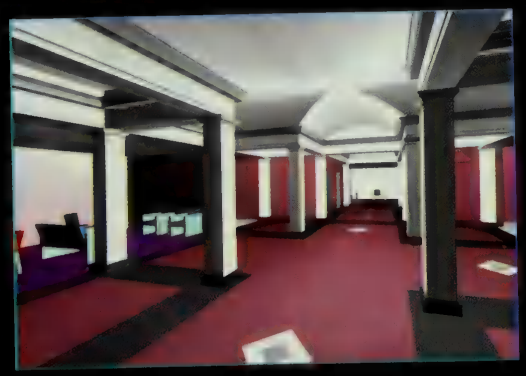
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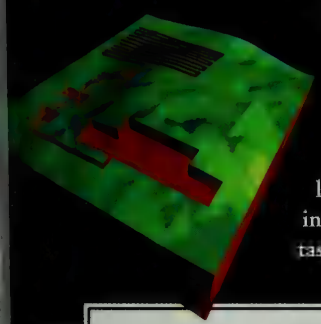
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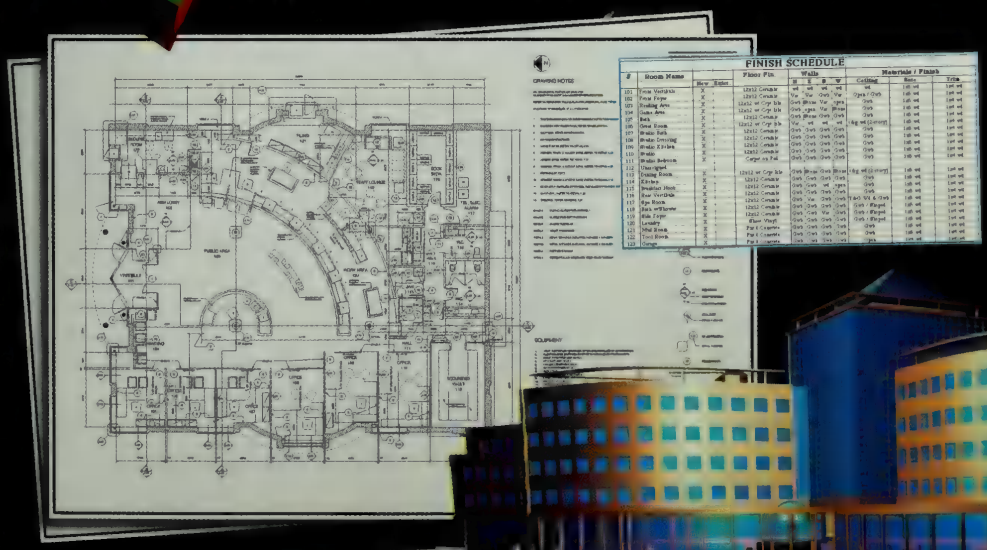
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1. The criteria for ensuring public safety divide federal buildings into five categories. Greater security measures are required as the facility's square footage, number of employees, and volume of public access increase. Most federal facilities fall into one of the first four levels, with special-purpose facilities, such as the Pentagon, being classified as level five. Building security committees evaluate each building.

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3. Risk factors include the symbolic importance of highly visible landmarks; functions considered vital to national interests; the overall impact of a potential attack in terms of death, property damage, and workplace interruptions; and costs associated with repairs and replacement.

4. Parking within the facility should be access-controlled. Surface parking should be controlled with appropriate perimeter barriers; handicap accessibility must be maintained. Magnetometers and X-ray equipment should be considered as integral to entrance lobbies. Lighting in egress areas should have emergency power backup. Emergency power units should not be co-located with primary power units, as they were at the World Trade Center, where a single underground explosion disrupted both power sources.

5. Fully tempered glass and laminated glass. For window assemblies to behave properly, the glazing, mullions, and anchors must all be able to resist blast pressures and transfer loads to the adjacent structure.

6. "Hardening" enhances vulnerable portions of a building by localizing blast resistance. Another approach is to attempt to mitigate partial or total building collapse through reinforced-concrete and steel buildings with well-detailed connections and through enhanced exterior glazing. To secure key building systems, route each system separately, rather than using a single, combined duct. Locate main feeds away from potentially vulnerable, publicly accessible locations and locate redundant systems remotely.

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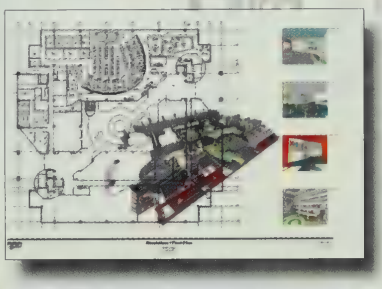
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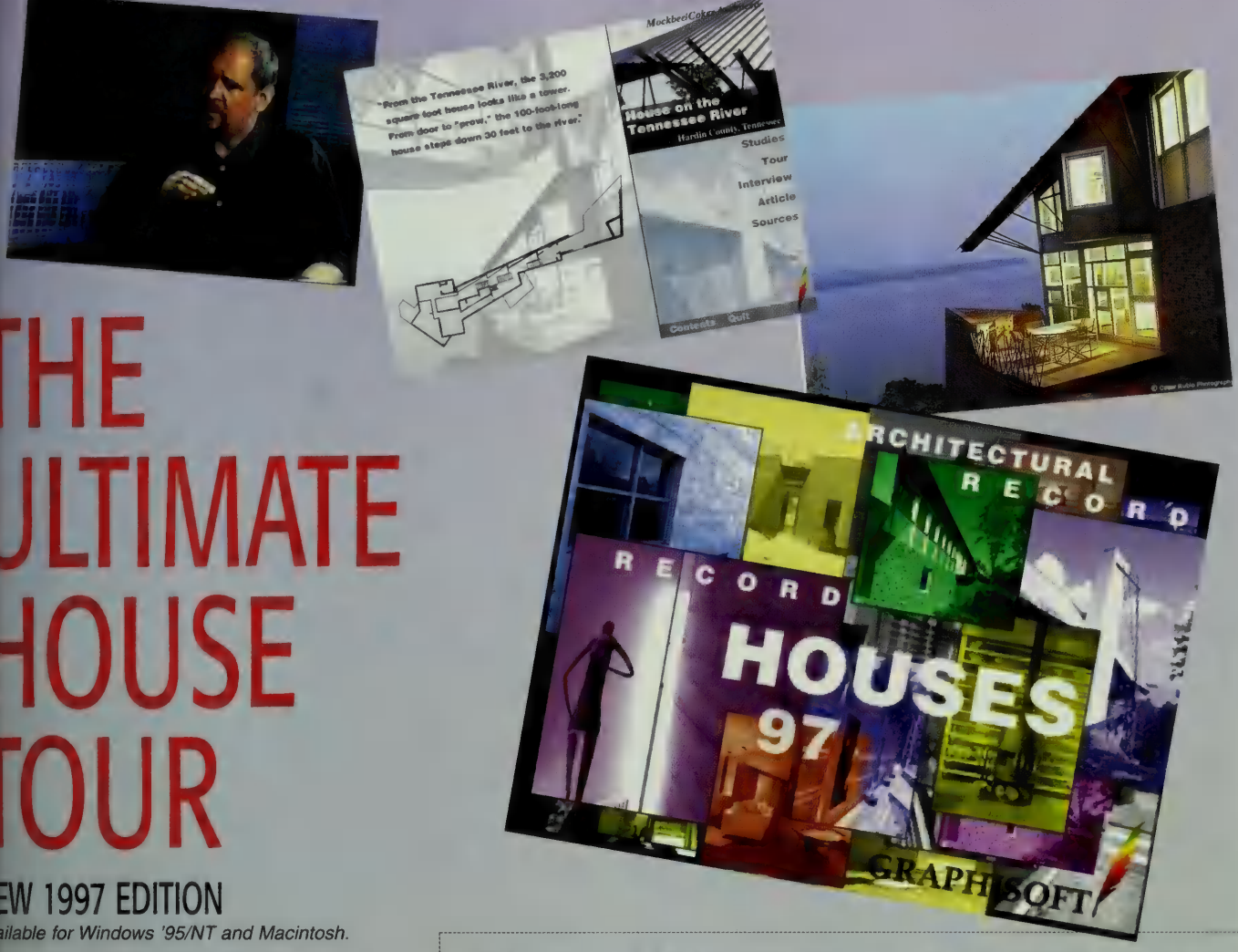
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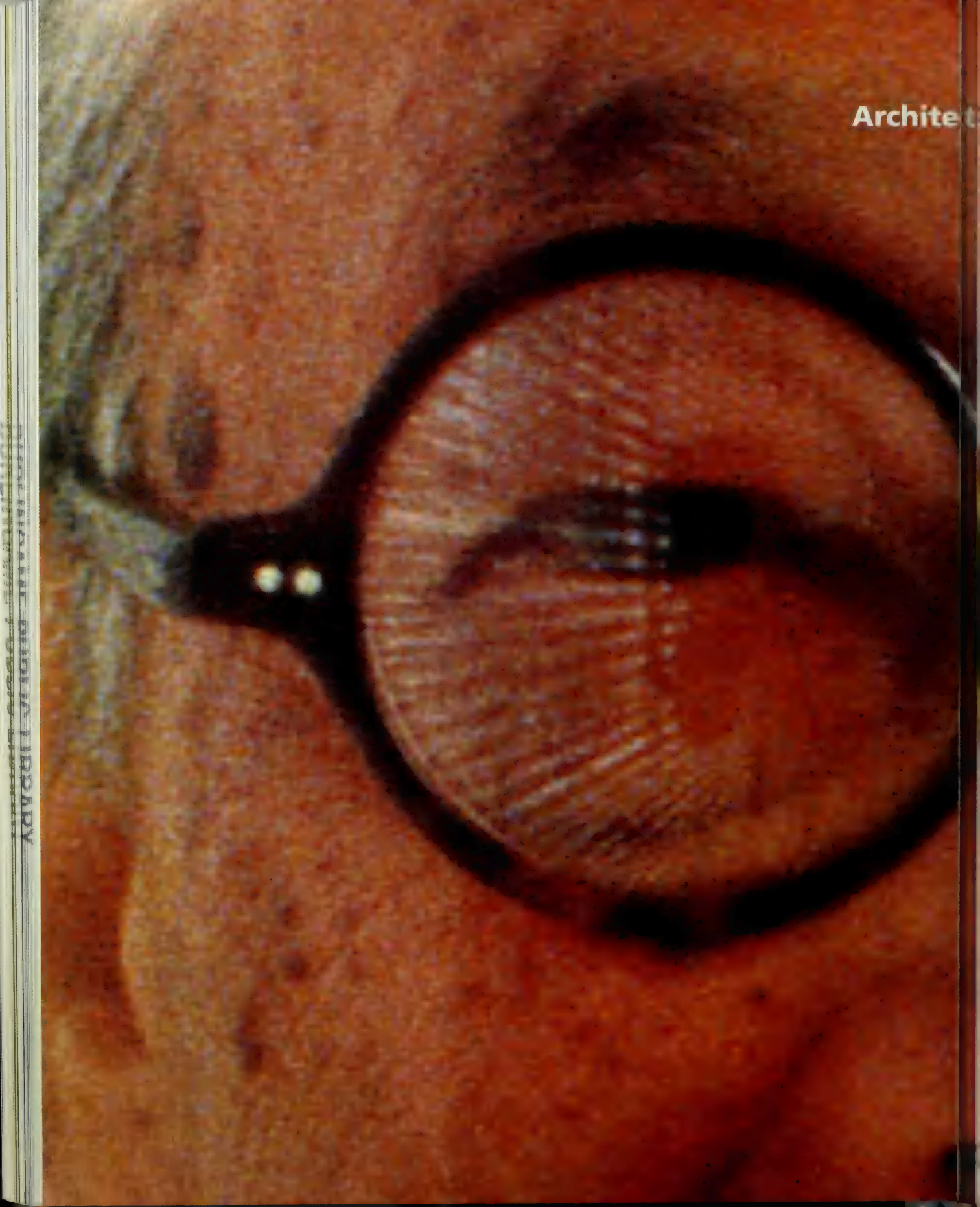
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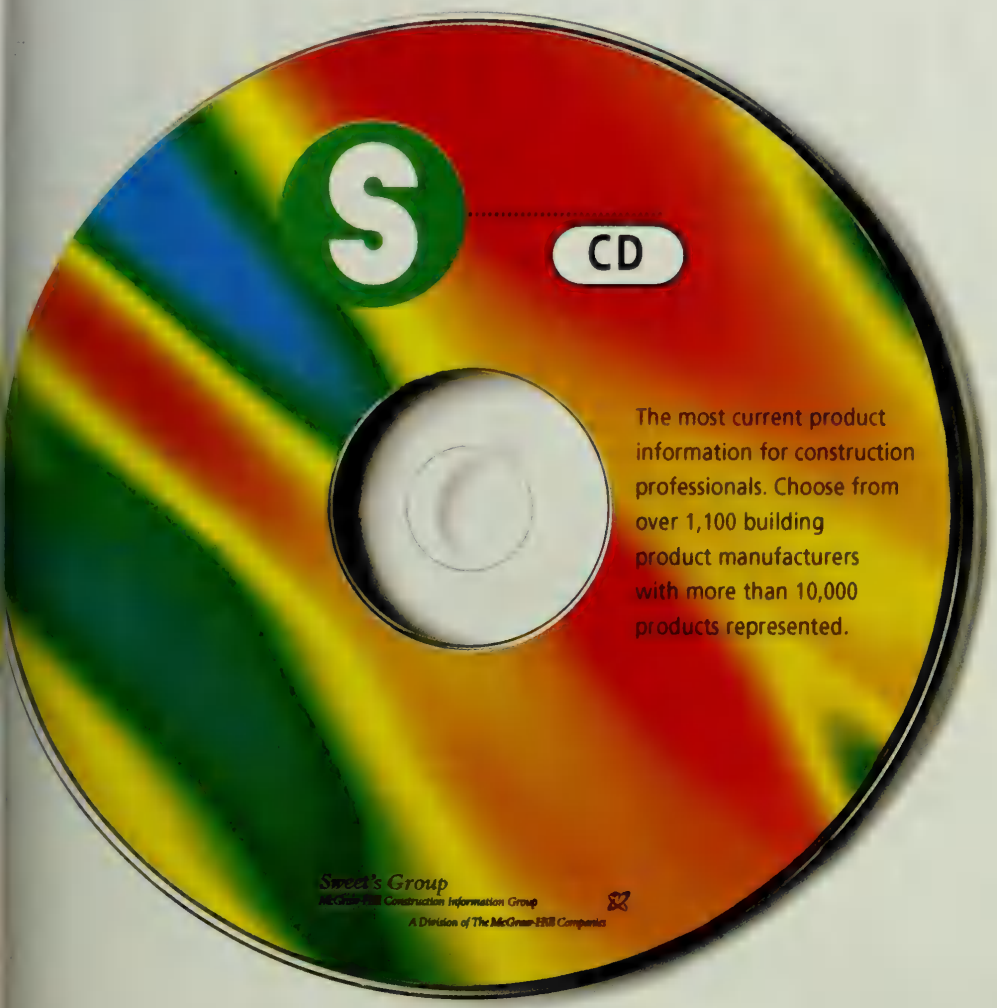
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judging the complex. While each defined coherence somewhat differently in his own assessment, it materialized in the visual and haptic responses of the critic walking through the center.

Martin Filler's much talked-about critique of the Getty, "The Big Rock Candy Mountain," published in the *New York Review of Books* (December 18, 1997), pointed to a lack of "internal coherence" in the complex, explaining that the "frenetically over-designed" buildings, with their "restless forms and mixture of stone, metal and glass," failed to offer any "vista of calm and repose," except for the view of the Pacific.

Lawrence Wechsler, a staff writer for *The New Yorker*, noted in an essay in the *Los Angeles Times Magazine* (December 7, 1997) that "The center was not succinctly defined, as a single entity.... For all the intellectually discernible coherence of its play of lines and arcs, there was no signature vantage, no singular impression of the place as a whole." In the November 1997 RECORD, Robert Campbell criticized the Getty by commenting, "No master narrative...governs your experience of the Getty. You're attracted this way and that without ever arriving at a place of centrality or rest." As Aaron Betsky put it in the December 1997 *Architecture*, "The result on the ground" has "little hierarchy or logic."

Clearly, coherence is perceived by experiencing the complex, whether it is defined in terms of viewpoints and vistas or a processional narrative that ends in a "place of centrality." Coherence may be strengthened by a "single great building" or a "Parthenon on the Acropolis," as Blair Kamin asserted in pointing out what was lacking from the Getty in the *Chicago Tribune* (December 7).

A view from above

None of the critics discussed whether or not the Getty was coherent from the aerial perspective (or the bird's eye-view), that is, the vantage point of the architect designing the site plan, looking down at the drafting board. This point of view is the one that Le Corbusier considered the modern perspective, actually supplementing and even supplanting the experience of architecture on foot. Because Le Corbusier drew attention to this new way of experiencing architecture from the air, he was instrumental in pointing to this split between the two perspectives, as Beatriz Colomina has noted. Yet not even Le Corbusier was about to give up the importance of the experience of architecture on foot, the *promenade architecturale* in which the body, the eye, and the mind are all at work.

In looking at the Getty we see that from the air (or the perspective of Meier working on the site plan), the overall ensemble forms a rather coherent assemblage with the topography of the site. Like Le Corbusier, Meier was drawn to this aerial perspective. On foot, however, the scale of the Getty complex defeats the subject's perceived sense of a whole, a unity. As Meier's critics imply, he gave short shrift to the most commonly shared experience—on foot.

This experiential form of criticism, needless to say, works particularly well for nonarchitectural readers of publications that use few photographs and no architectural drawings, such as the *New York Review of Books* or the *New York Times*. In his Getty Center essay, Filler, in smooth-as-butter prose laced with strichnine-tinged humor, brings the reader from the off-white reserved parking structure and tram to the off-white center on the top of the sunlit hill. He remarks, "The initial irony of this shrine to the visual arts is that after the exhausting act of getting there, you cannot see it without squinting."

Filler opted to use the experiential narrative as a device to get the reader to the galleries; however, kinesthetic qualities assume a lesser role as he begins to interweave background histories of the Getty and its collections into the text. Further discussion of actual architectural issues gives way to behind-the-scenes dramas that preceded construction.

Filler views the kinesthetic experience as a trap that entices the critic into relying on sensual description. True, it can result in equivocation. In his piece on the Getty in the December 1, 1997, issue of the *Times*, Muschamp embeds perceptual details within memorable anecdotes. For example, he relates that "Meier invited a few people to join him at the Getty Center to watch the sunset." The sun "spills down on your body, into your eyes. It gets more and more golden and by twilight you're having a pure Apollo moment." Flower-eating deer join this party and, like the critic, their ecstasy doesn't rely on architecture. The reader, however, is still left wondering what Muschamp really thinks about the architecture.

In Wechsler's L.A. *Times* essay on the Getty, his prose is suffused with romanticism: "There's that same breathtaking panorama I so lovingly remember, but somehow even more sublime for being framed, momentarily withheld, and then divulged all over again, though from a freshened angle." To be sure, Wechsler—like Ouroussoff in an earlier L.A. *Times* piece—emphasizes the design of space in the architectural whole. As Ouroussoff observes, the spaces in between the buildings "allow the eye to wander, while still pulling the visitor along in an artistic reverie."

The gap again

Theoretical critics, in addition to journalistic critics, have been investigating perception, experience, and architecture, dwelling on notions of the "body." Many such investigations have been strangely impersonal and abstract, but there are signs the situation is changing. *ANY* 21 devotes an entire issue to "How the Critic Sees: Seven Critics on Seven Buildings."

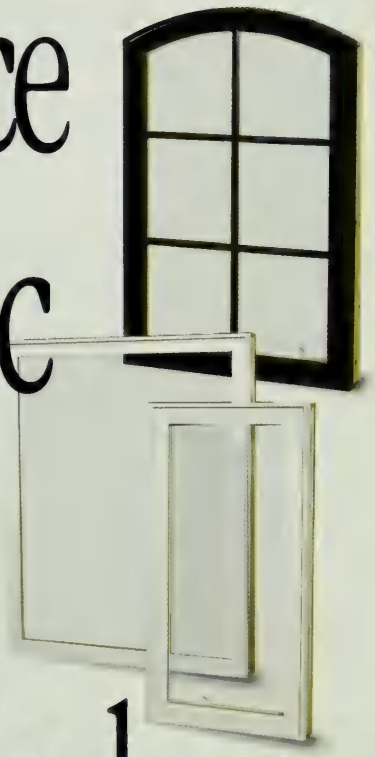
Two essays in particular, Sarah Whiting's critique of Jean Nouvel's Congress Center in Tours, and Cynthia Davidson's analysis of Rem Koolhaas's Kunsthal in Rotterdam, illustrate important attempts to develop an experiential form of criticism, with the critic as a moving, seeing, thinking subject. Instead of dwelling on the sensual, Davidson takes a cerebral approach: "I am reminded of Jean-Luc Godard's filmic jump cut, where time between frames vanishes, no longer providing a continuous narrative sequence and momentarily dislocating the viewer with new visual information." Whiting also uses cinematic references while adhering more closely to a visual and kinesthetic examination: "The interior is actually a realm where perception is perpetually teased through plays of reflection, luminosity, transparency, and a deliberate blurring of the typical distinctions that distinguish walls, floors, and ceilings."

Comparing these examples of theoretical criticism to the journalistic ones on the Getty is revealing. The first batch, written by men, veer into the squishy, amorphous, romanticized world of pleasure. The second group, all by women, still focus on sense perception but appear more precise, more rigorous, less self-indulgent. This comparison is intended to point out where further work could be undertaken in criticism on both practical and theoretical levels. Most emphatically, critics need to confront the ways in which they can communicate to their various publics.

The obvious issue that has not been discussed here is how architectural criticism should relate to the world at large—to larger cultural and political issues, as Mumford did. In examinations of criticism within the political and social sphere, the role of the person and his or her involvement in the environment often get lost. The inward-turning movement, already seen in the work of journalistic and theoretical critics, was a response to that situation. Perhaps the next step should be trying to place architecture and urbanism that is meaningful to the person back in the larger social and political picture. ■

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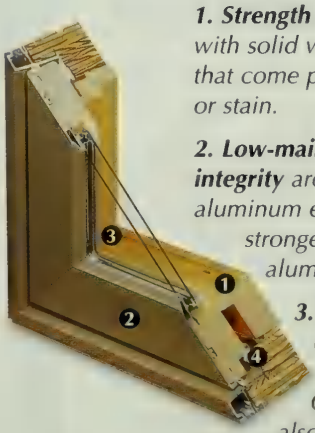




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SECURITY DESIGN *continued from page 148*

3 percent or less for county projects. At the $22 million Charlotte County Courthouse in Pensacola, Florida, approximately $400,000 was spent on security measures.

"Judges want secure buildings, parking, and a secure path to their chambers. They don't want to be shot and killed on the way to work," Dwore observes. "When assessing property, street setbacks are important. Raising courthouse functions well above street level, use of wide stairs, ramps, hardened building elements, bollards, and landscaping can prevent vehicles from causing further damage to secure areas. Large-caliper trees on site can keep vehicles at a safe remove from the building."

Life-safety systems

Security planning is now integral to building and life-safety systems. Experts recommend that mechanical systems include gas detectors and the capability to keep biohazards out of fresh-air intakes, especially at research and lab buildings.These should be located where unauthorized access will be minimized as well.

Fire sprinklers should not branch off from the main water-supply line at a point where they would be vulnerable to failure if there were an accident. Similarly, water mains and pumps should be plumbed so that if a break occurs in the main, there is an alternate way to get water to the pumps. Building-utility areas must be secured by controlled access. Fire stairs and areas of refuge and escape should not empty into main lobbies or loading docks because these are areas of high potential risk for an explosion, and evacuating people through them could cause injuries and panic. Exit stairs are much more easily rerouted during the conceptual design phases than later on.

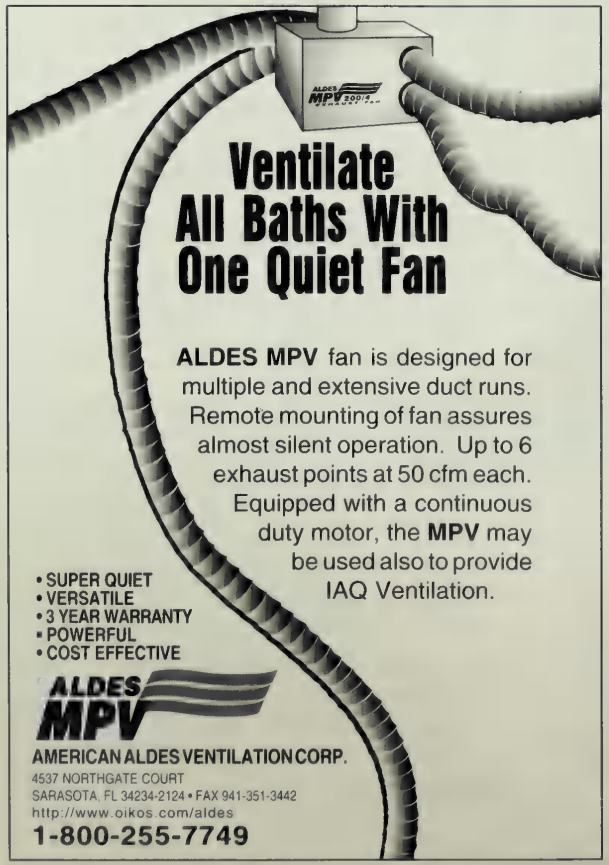
Security-system lines, telecommunications, and electrical power should be routed separately rather than run through a single duct. Main electrical feeds should not enter buildings at potentially vulnerable locations, such as loading docks, receiving areas, and main entrances. Redundant systems, if located remotely, also provide a level of protection. If one system malfunctions, the other can replace it.

Parking garages

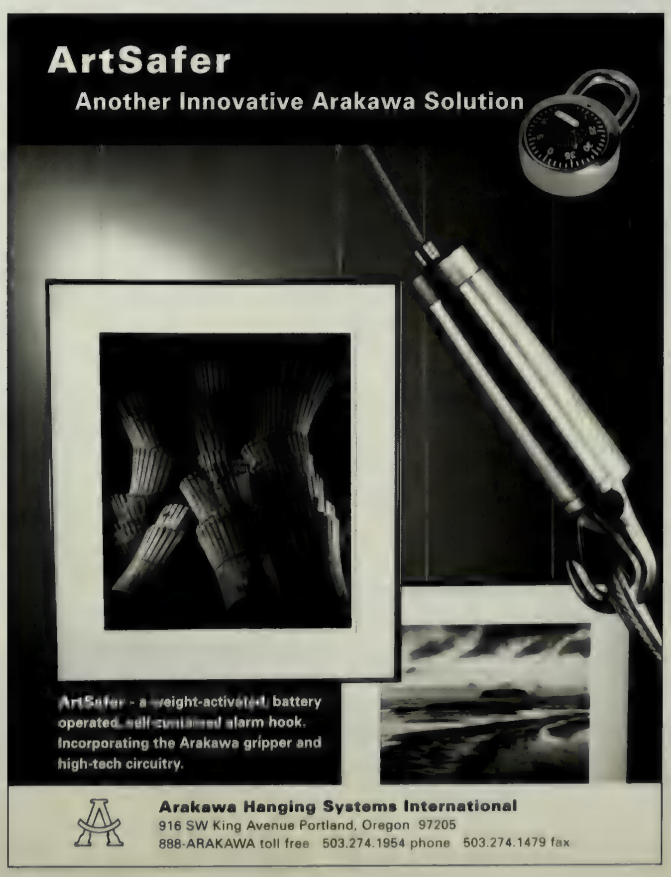
The World Trade Center bombing in an underground public parking garage caused several floors to collapse, destroying the chiller plant and the backup emergency generator system. Primary and secondary systems were located side by side, not remotely. "Public underground parking should not be located near critical building systems, backup generators, or gas meters," observes William Daly, managing director of Kroll-O'Gara Company, a New York City security, investigative, and risk-management firm that was a consultant to the Port Authority of New York and New Jersey for the World Trade Center after the disaster. "Such areas require compartmentalization, and their walls should be strengthened with steel plates to deflect explosions. Locating emergency systems above grade is better to avoid flood damage, but if they should catch on fire on upper floors, extinguishing the flames is very difficult."

Since the bombing, underground parking has been limited to prescreened tenants. Deliveries must be preauthorized and may be received only at checkpoints from those with identification.

Several new automated-access controls in office buildings reflect new technology, says Daly. Biometrics electronically read the contours of hands for identification. Retina scanning, fingerprinting, and proximity-card access systems are user-friendly methods to screen pedestrian traffic.



CIRCLE 79 ON INQUIRY CARD



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Blast-resistant design

Blast design is a relatively new area for commercial and civilian buildings, and there are several points of view on the subject. Some federal agencies want to enhance vulnerable portions of their building by localizing blast resistance, or hardening, says David Kossover, P.E., a New York City structural engineer and blast expert. In contrast, the British don't recommend hardening their civilian buildings but assume there will be a certain amount of damage. They concentrate on mitigating partial or total building collapse and on improving the blast resistance of the exterior glazing. Others claim that reinforced-concrete and steel buildings with well-detailed connections often withstand pressures and vibrations from explosions and do not sustain extensive permanent damage. They also admit it is not possible to design a bombproof building that will survive undamaged and guarantee few injuries. Instead, limiting damage and human injury is best achieved through good design, not necessarily through localized blast-design techniques. This debate will most likely continue in the years ahead.

Features that enhance buildings may also make them more vulnerable to attack. Windows and atria provide openness and daylight but also contradict blast-mitigation objectives, asserts engineer Tod Rittenhouse, blast expert and principal of Weidlinger Associates, a New York City consulting engineering firm. Blast-mitigation strategies permit significant localized damage while preventing catastrophic collapse. Casualties immediately near a blast may be unavoidable, but by preventing progressive collapse, further fatalities may be reduced.

Seismic design does not apply to blast resistance, because earthquakes and explosions affect buildings differently. Blasts usually affect a relatively small geographic area around a building's perimeter, while earthquakes move the entire building. When a building is hit by a bomb, damage generally occurs to its skin, floors, and interior walls. These areas are not designed to transfer blast loads to a building's frame, so they may tear away, leaving the structural frame intact. Even though a structure may not be damaged by a seismic event, in a blast, permanent deformation of columns and girders (see sidebar, page 146) may occur in areas near an explosion.

What lies ahead?

The GSA's current enthusiasm for the design-build method of project delivery raises concerns that some aspects of security design will be diluted during budget reviews. "As government agencies move from traditional design-bid-build to alternatives like design-build, it will be interesting to see how security criteria will be value-engineered and applied," says John Sporidis, senior vice president of HDR Architecture, in Alexandria, Virginia. "When projects go the design-build-developer route, we must pay attention to ensure that the integrity of the design is not compromised and nothing is lost."

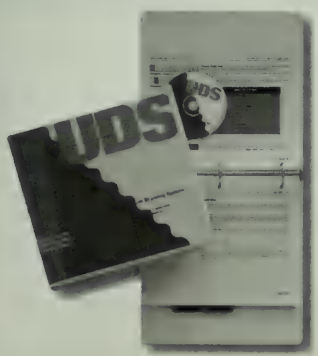
By all accounts, Americans haven't seen the last terrorist attack on public- or private-sector buildings. Clients—and the public—will continue to demand comprehensive yet unobtrusive security responses from the design and construction industries. It is also essential that research continue to find the most appropriate building materials that can withstand a host of attacks, accidents, and disasters. The challenge ahead is to seamlessly integrate life-safety and security measures with aesthetic building design. Security need not be incompatible with good design—and the use of prudent precautionary measures may save countless lives and millions upon millions of dollars in damages. ■



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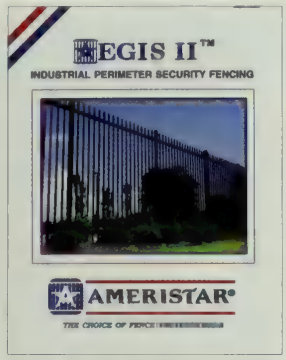


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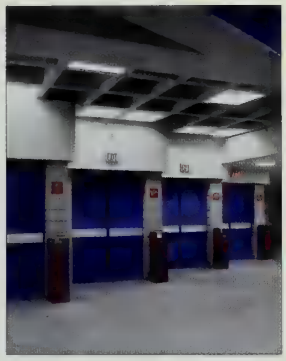


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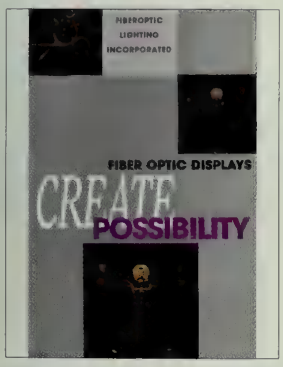


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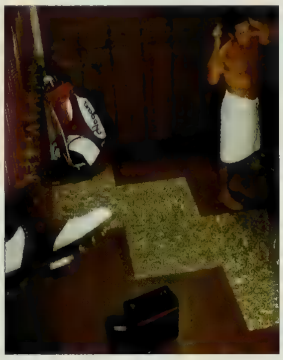


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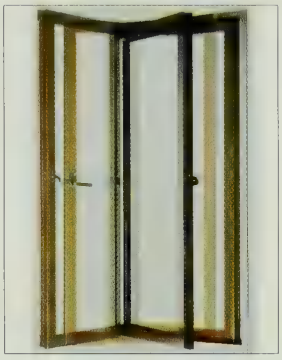


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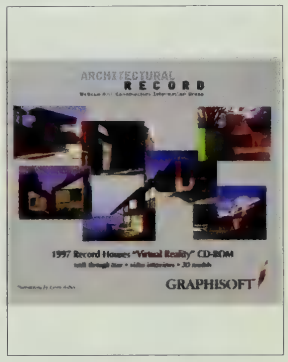


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DIRECTOR OF THE HAMER CENTER JOINT FACULTY POSITION/FALL 1998 PENNSYLVANIA STATE UNIVERSITY

The newly formed Hamer Center for Community Design Assistance is organized to utilize the expertise of faculty and students in the School of Architecture and Landscape Architecture (SALA) to address a range of issues affecting the quality of our rural and urban environments focused in the Commonwealth of Pennsylvania. Hamer Center activities in community service outreach will entail two distinct but related types of undertakings: 1) Applied Research; and 2) Theoretical Investigations. Hamer Center projects will address community problems in such areas as community-focused design, rural planning, affordable housing, development of design guidelines, park and recreation planning, environmental and ecological analysis. SALA is seeking the founding director for the Hamer Center--an individual capable of providing leadership and management for all functions of the Center. Position responsibilities include: 1) collaborating with SALA faculty to develop the structure and vision for all Center activities; 2) serving as a highly visible spokesperson to promote excellence in the design and stewardship of the natural and built environment; 3) providing expertise that will enhance the mission of SALA in teaching, research/creative activity, and service; 4) coordinating faculty research agendas with Center initiatives; 5) seeking, writing, and administrating research grants; 6) conducting research and pursuing creative activity in community, rural, and/or urban design; 7) engaging in teaching activities at undergraduate and graduate levels; and 8) management of Center resources and staff. This important joint faculty position in Penn State's new School of Architecture and Landscape Architecture will hold rank commensurate with individual qualifications in a multi-year renewable contract. The competitive candidate will hold a professional degree in architecture, landscape architecture, planning, or urban design, as well as an advanced degree. Five years minimum experience in a community design center or relevant professional/academic experience; excellent communication and interpersonal skills; familiarity with relevant computer applications; and evidence of leadership in community issues are highly desirable. Send a letter of application including a statement of personal philosophy toward this position and the Center, a resume, and names/addresses of three references to: Chair, HCCDA Director Search Committee, c/o School of Architecture and Landscape Architecture, 206 Engineering Unit C, The Pennsylvania State University, University Park, PA 16802, (814) 865-9535. Applications received by April 1, 1998 will be assured consideration. AA/EOE

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THE FUTURE A new age with bold aesthetic statements and deep functionality.

BY WATTS WACKER



If the single greatest moment in the history of humanity was when Lucy, the first biped, got up and walked, perhaps the second greatest—for architects, especially—was when people started to acquire things. Gathering led to the need for storage, which led to the need for buildings.

Just as humankind has evolved through the great ages of history—from hunter-gatherers to farmers to corporate raiders and mallwalkers—so have our homes and buildings. Now, as the industrial era yields to an age of information, three metatrends, the great changes underpinning this global transformation, will significantly influence both architecture's aesthetic aims and its construction technologies.

THE FIRST SEISMIC SHIFT IN THE WAY WE LIVE IS MOBILITY—ONE OF THE TRUE AMERICAN FREEDOMS.

The first seismic shift in the way we live is mobility, one of the true American freedoms. Since World War I, the United States has become the world's most mobile society: more than 25 percent of Americans move on a yearly basis. Mobility has become so ingrained in our lives that home is no longer just a location but a concept. People want the feelings associated with home—like Big Macs and strip malls—wherever they go, be it Paris or Peoria. The architectural profession will have to come to grips with the ability of people to "take" their home with them as they go about their journeys and adventures.

The second great influence on the Information Age's architectural philosophy will be homophyly. This term, borrowed from the life sciences, connotes the tendency of things that touch to resemble each other. In the same way that two people who have been married for 40 years begin to look, speak, and think alike, humankind is becoming more similar, not more different. And as people rush at a dizzying pace toward global unity and homophylization, buildings—and everything else under the sun—will grow more and more similar.

Yet we always crave what is scarce. So while humanity hurtles toward the haven of sameness, we will at the same time put an ever greater premium on things that stand out. Frank Gehry's Guggenheim Museum Bilbao is an important new "signature" building in the homophylized world. And cities and corporations will go to even greater lengths to present unusual, standout design like Gehry's over the next 25 years.

Emerging lifestyles in society are built on new freedoms. We already have life, liberty, and the pursuit of happiness; freedom now means to go, to do, to be, and to know. The architecture firms that speak to the four new freedoms with major, bolder projects will be the ones that lead us into the 21st century.

The third great influence on future architecture will be information technology. A single $5 musical greeting card for sale at the local five-and-dime today has more computational power than all of the computers in the world combined in 1950; and the benefits of technology will move forward even faster in the Information Age. If the 1980s was the era of the personal computer and the 1990s that of microprocessors, the hallmark of the new age will be microelectronic mechanical systems.

Microelectronic mechanical systems sense their environment and react, continually altering a building's conditions to accommodate the structure itself and the people inside it. In the future, every new building will be "smart"—with an increasing capacity for smartness. A microelectronic mechanical system is now being installed in the base of the Transamerica Building, in San Francisco, which will be able to adjust the foundation during an earthquake to keep the building from toppling over.

THE FIRMS THAT SPEAK TO THE FOUR NEW FREEDOMS...WILL BE THE ONES THAT LEAD US INTO THE 21ST CENTURY.

Eighty percent of all the buildings that exist in America today have been built since 1950. Eighty percent of all the buildings that will exist in the world in 2020 will have been built since today. The application of the information technology infrastructure—giving buildings their own evolutionary capability—will become a critical component of the architectural industry in the future.

Simply put, the architectural world of the next 25 years will be remarkable for its increasingly bold statements and deepening functionality, enabling the emerging lifestyles and freedoms of this new Information Age. ■

Watts Wacker is chairman of Firstmatter, in Westport, Connecticut, and a futurist at SRI International, in Menlo Park, California.

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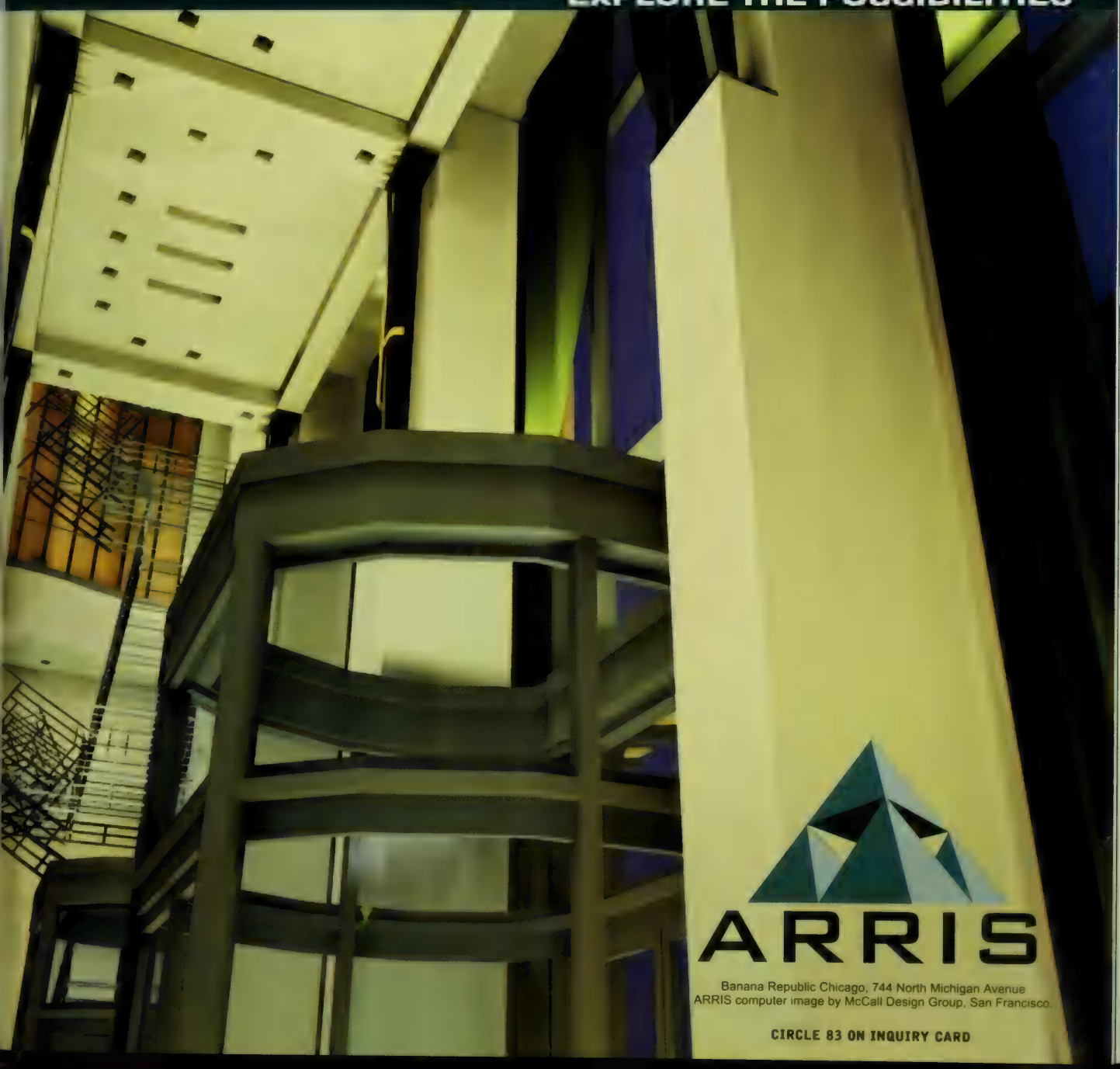
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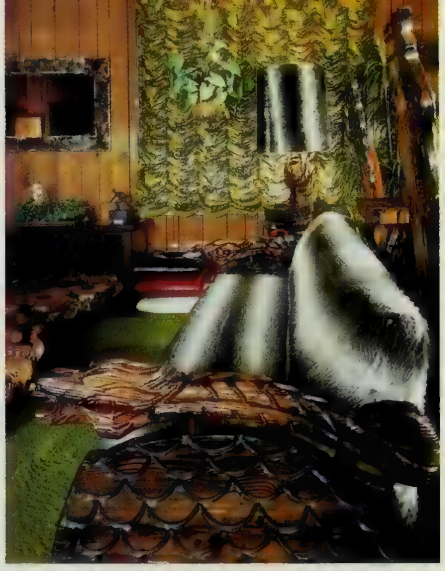
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Cover: *64 Wakefield Drive, Atlanta. Scogin Elam and Bray Architects. Photo © Timothy Hursley.*
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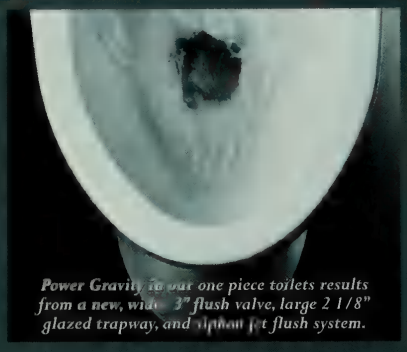
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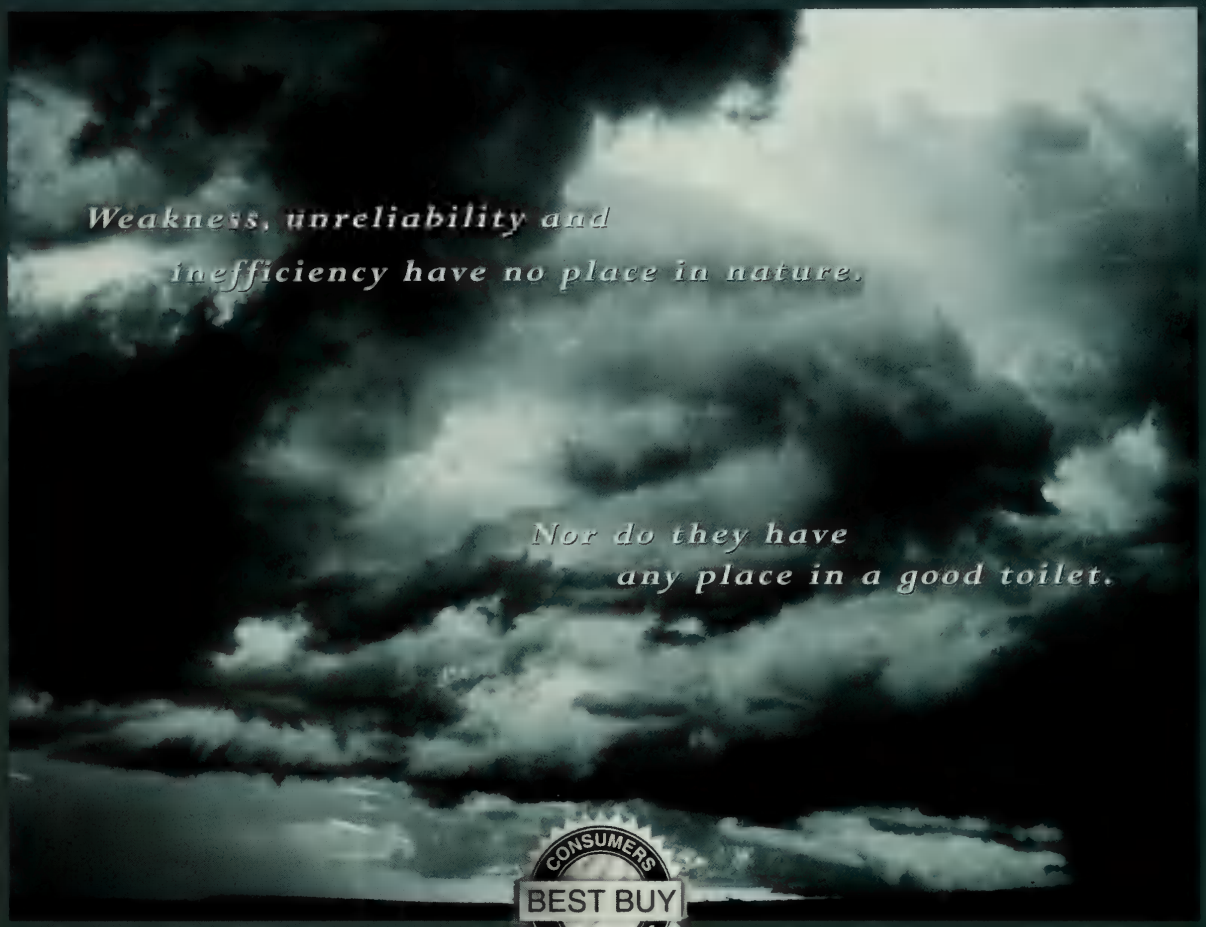
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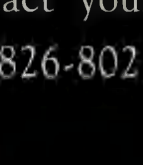
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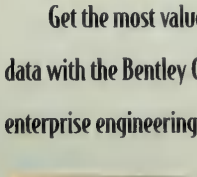


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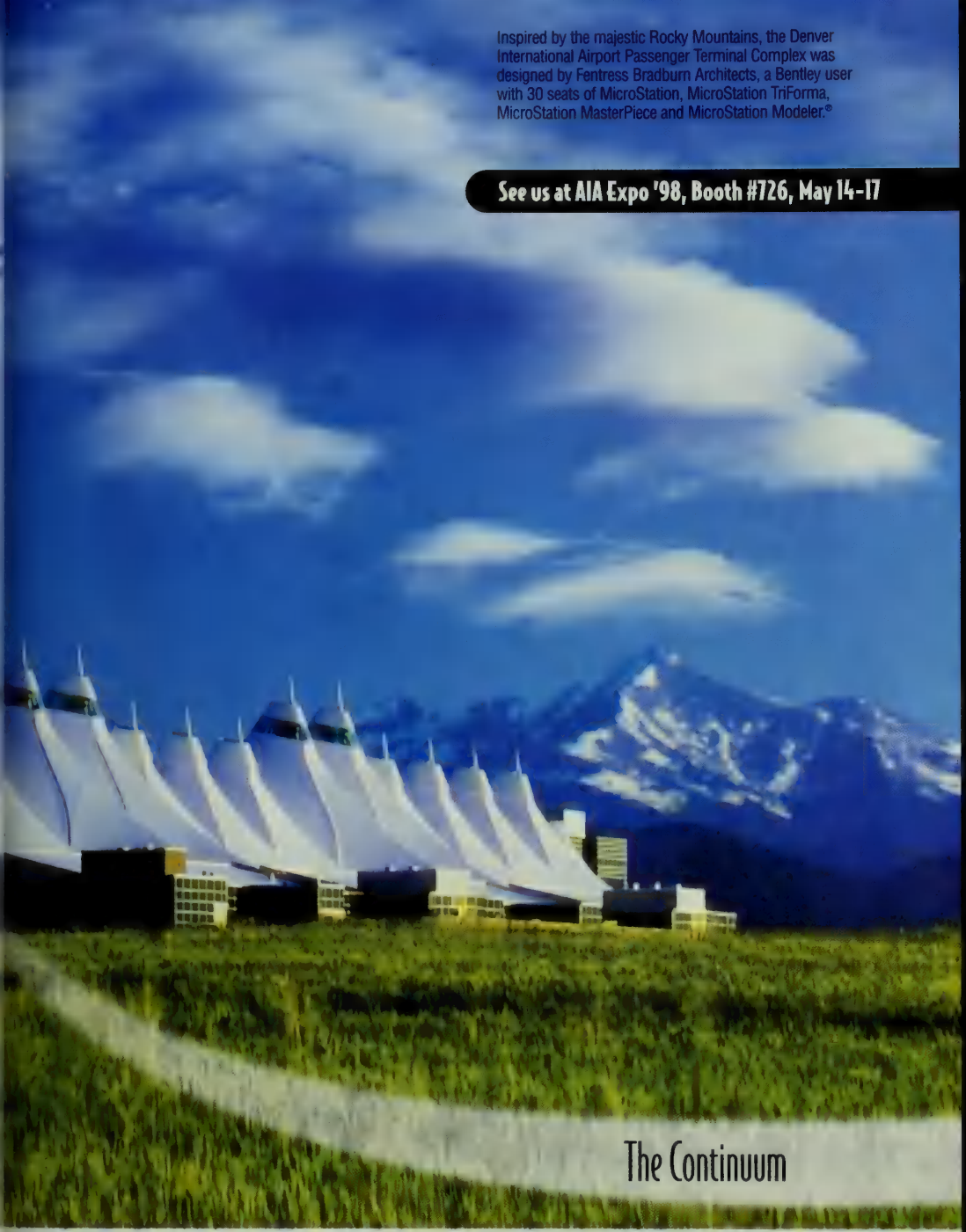
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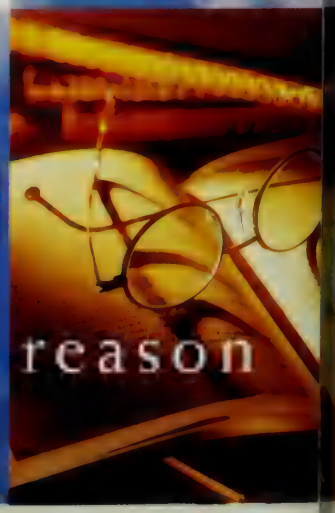
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EDITORIAL

Building sanctuary

BY ROBERT A. IVY, FAIA

After visiting the Chapel of St. Ignatius at Seattle University this winter, an architect told me how powerfully the building had affected her. A lapsed Catholic, she found herself forced to sit down on first entering the interior, as she was so completely overcome by emotion and memory. The new building acted like a key for her, unlocking a wealth of internal, unspoken language with unanticipated force.

She is not alone. This one small building, set in the middle of a college campus in an unprepossessing neighborhood, has drawn 35,000 visitors since it opened last summer. And people continue to seek it out. On a recent visit, two buses dropped off retirees to tour and marvel at the same time that visiting architecture students walked through the building, intently drinking in the spaces and poring over the details. The groups were silent as they intermingled.

What is it about the building that draws people? The sense of anticipation that this magazine [July 1997, page 41] and others helped generate by publishing lush images of the completed construction? The unexpected way the building's concrete monitors rise up to catch the soft Northwest light? The processional pathway or the vaulted interior that balances forces, from compression to release? The sunlit colors that wash the walls? The artful, human touch in patterned plaster or translucent glass?

This tiny place, which had not existed prior to 1997 outside the hopes of a Jesuit community and architect Steven Holl's imagination, seems to be on its way to joining a select group of buildings that have become architectural touchstones. Like other important individual buildings before it, the chapel demonstrates that true architecture has the power to affect the human spirit—for many people, not merely for an elite few. The crowds bear stronger witness than any critic could.

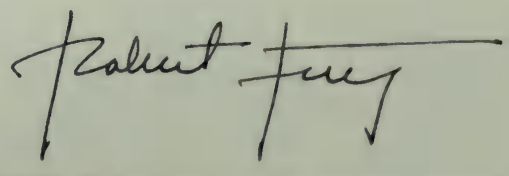
Perhaps there is something in the building type, a chapel, that enables visitors to grasp architecture in its fullness. St. Ignatius, like many other fully realized works of art, engages the senses and allows an interplay of thought and feeling, but its scale offers the possibility of some level of intimacy: we can be moved without being overwhelmed.

Historic examples underscore the point. Think of Le Corbusier's pilgrimage chapel, Notre Dame du Haut at Ronchamps, and how that billowing, concrete presence both dominates our imagination and elevates our spirits. Or Thorncrown Chapel, Fay Jones's laced-together masterwork in an Arkansas forest, a structure at once transparent and arresting. Both buildings can be grasped intellectually, yet both evoke the ineffable.

Not all such potent structures are sacred. Louis Kahn's Kimbell Art Museum in Fort Worth provides a grounded group of tentlike pavilions that bathe art and the human form in light and time and materiality. His cliffside Salk Institute can provoke catharsis, so insistently and clearly does it posit the human figure between earth and sky.

We are often uncomfortable in an age dominated by digital rationalism to express our inner motivation; irony and knowing diffidence often mark our public expression. However, the Chapel of St. Ignatius and other powerful works of architecture confront us with another dimension, a quiet zone where the human heart longs to rest. Regardless of whether or not we embrace a religious tradition, architecture, in the best hands, at the right time and place, can construct a spiritual home, a shelter for our secret selves, and a place apart. Our forebears called such places sanctuary.

While time and experience will determine whether the Chapel of St. Ignatius finds its way into the modern canon, it is encouraging that, though isolated, some contemporary examples continue to be built at the intersection of construction and poetics. They inspire us and remind us why we became architects.




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CIRCLE 9 ON INQUIRY CARD

LETTERS

Bilbao in support of Gehry

I am writing in response to Richard Battaglia's letter in the January issue. As a native Basque living in Bilbao, I can report that Frank Gehry's building for the Guggenheim Museum Bilbao not only is considered an architectural masterpiece but has also become, in its four months of existence, an icon for the city of Bilbao. According to a survey, nine out of ten of the more than 380,000 people who have visited the museum since it opened rate the building as very good or excellent; local institutions have awarded Gehry the highest civil recognition; and prominent Basque artists praise his creation in laudatory terms. He has even been asked to sign autographs on the streets of Bilbao as if he were a film star.

I believe I reflect the feelings of my fellow citizens when I say we are honored and grateful for his creativity and dedication, which have produced a home for the collections and exhibitions of a first-rate modern and contemporary art museum as well as a building that has captivated our imagination and helped us understand our own city. We are proud to regard Gehry as one of us, and consider his building no more foreign to Basque culture than the Eiffel Tower is alien to Paris or Utzon's Opera House is to Sydney.

—Juan Ignacio Vidarte
Director General
Museo Guggenheim Bilbao
Bilbao, Spain

O'Keeffe Museum courtyard

Thank you for your excellent article on the Georgia O'Keeffe Museum in Santa Fe (January, page 80). It is a great asset to our community not only culturally but also economically, and everyone involved deserves much credit. I have been disturbed, however, that in most articles about the museum no credit has been given to the original designer, Ron Robles, who transformed the existing structures into a unique art gallery. Some feel that the gallery spaces were even more exciting when it was still the Allene Lapides Art Gallery, particularly the way the interior spaces related to the large central courtyard. It is interesting that David Dillon criticized the present building's circulation, which requires visitors to retrace their steps. The courtyard would have been an obvious way to provide for a secondary exit while allowing the public to experience this outdoor space.

—Thomas Higley
Santa Fe, N.M.

Integrity of the PSFS building

I read with interest about the conversion of the PSFS Building (January, page 32), one of the few modern American tall buildings that are successful as both architecture and urban design. Without resorting to historical styling, the building uses sensuously modern materials and details to create a strong civic presence at street level and a memorable banking chamber one level above the street. The tower articulates its functions without using small punched windows or the bland, ubiquitous curtain wall.

It seems feasible that hotel functions could be compatible with the tower form. Howe and Lescaze's drawings show the typical floor subdivided into small offices at twice the spacing of the principal mullions. It would, however, be a tragedy if the integrity of the banking hall and the ground-floor entrance to that space were compromised. Architects should scrutinize the conversion of this building closely.

—Philip Graus, ARAIA
Sydney, Australia

VSBA: "Nifty notions"?

Your interview with Venturi Scott Brown and Associates' three principals confirmed my long-held belief that they are clever talkers but lousy architects (February, page 58).

The principals speak glowingly of how Americans "vote with their feet" in favor of the commercial buildings of the Strip and the kinetic graphics of the computer age. Yet this public, by and large, loathes VSBA's designs. This is a contradiction for a firm that bases the validity of design decisions on the judgments of the populace. In a similar vein, the architects feel that community involvement with design was terrific in the 1960s and '70s, when it was used against Venturi's Modernist opponents, but that it is being "misused" now that it regularly thwarts VSBA's work.

Another logical gap occurs when the architects complain that young designers nowadays are practicing a Modernism (Venturi's term is "abstraction") devoid of ideological underpinnings. It's hard to see how VSBA could take issue with this, since "ugly and ordinary" sources of their inspirations are equally if not more devoid of ideology.

Most irritating of all, the architects say that "it is a misinterpretation to regard Postmodernism as coming out of our books," yet they present themselves as the owners of the idea of Postmodernism and judges of its correct application. Postmodern-based arguments used against VSBA's designs are also referred to as "misinterpretations," as though the firm has the right to control how others use ideas.

Venturi, Scott Brown, and Izenour have mastered the art of inventing catchy phrases (like "complexity and contradiction" or "messy vitality"), but do these nifty notions really qualify as "architectural theory"? Good architecture sells its designer's theories more powerfully than volumes of verbiage ever could; likewise, unconvincing architecture undermines its creator's theories. One look at the hapless, witless buildings pictured alongside the interview makes it perfectly clear: the self-proclaimed emperors of architectural theory are, at best, scantily clad.

—Steven K. Dickens, AIA
Washington, D.C.

Kudos for the new RECORD

I'm a country architect with a one-horse office in a small town near Lexington, Kentucky. I got paid for my first set of plans as a 16-year-old, 40 years ago, and I've been reading RECORD as long as I can remember. In the past it seemed like it was written for academia or other architectural critics, not for those of us in the trenches each day. Thank goodness the local recycling center took magazines, because I'd toss out many an issue. Now—what a difference! Not only do I save the issues, but they end up looking a lot like Big Bird with all the Post-it notes marking articles to read. Keep 'em coming!

—Day Johnston, Architect
Georgetown, Ky.

February credits/corrections

A story on the renovation of Detroit's Renaissance Center (page 29) failed to mention Gensler as the interior designer for the project.

Inadvertently omitted from the credits for the Rhys Carpenter Library (page 82) were Michael Rock and George Stout of 2 x 4, who created the project's graphics.

The complete credits for Ventilation Building No. 7 (page 100) include David Wallace and Peter Floyd of Wallace, Floyd, Associates; Rebecca Barnes, the architect representing the Massachusetts Highway Department; David Lee of Stull & Lee; and the Bechtel/Parsons Brinkerhoff Joint Venture, the lead firm and managers of the Central Artery/Tunnel project and preliminary engineers for the building.

The custom-designed chairs for the James N. Gray offices (page 133) were made by Lampa, Aquebogue, New York.

In "Lowering the Risks of Reroofing," the photos on page 142 should have been attributed to Peter Blaufeux AIA Architects.

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CIRCLE 12 ON INQUIRY CARD

SPEAK OUT There's no substitute for land-based planning and design principles.

KALVIN PLATT, FAIA



Kalvin Platt, FAIA, is chairman of the SWA Group, an international land planning, urban design, and landscape architecture firm headquartered in Sausalito, California.

Boston's City Hall Plaza, built in the 1960s, is an overly large, superficially impressive public square that everyone loves to hate. Surrounded by the Government Center's office buildings, it is a lifeless void in the heart of Boston and is shunned by residents and visitors alike.

Williams Square in Las Colinas, a suburban "edge city" outside Dallas, has a central fountain with a herd of nine galloping bronze horses. Bordered by office buildings and tree-shaded lawns, this public square provides the welcome sight of water in a dry climate, the pleasurable sound of a splashing fountain, and an evocative reference to Texas's frontier past. Encouraging people to visit and chat, Williams Square is a popular destination for both workers and residents.

Why are these two public spaces so different in their appeal? The answer lies in land-based planning and design principles.

Architects have building skills. Engineers have skills in infrastructure and technical systems. Policy planners and developers have implementation skills. But when these teams pursue development-as-usual, they often overlook the comprehensive land-based perspective that gives them the big picture: the land and the buildings, hard infrastructure and soft infrastructure, surrounding uses, and how the overall environment works together.

What our firm calls land-based planning and design principles work with the site and the community (not against them) to improve the built environment, transforming off-the-shelf projects into exciting catalysts for urban redevelopment and economic growth.

The following basic principles should be adopted by architects, engineers, policy planners, and developers.

Apply land-based planning and design to all locations. Whether in the countryside, suburbs, or cities, these principles can be adapted to the specific requirements of each site. In the typical edge city, for example, land-based planning and design would preclude an office tower that looks good on a brochure but actually stands isolated behind vast surface parking lots. Surface parking would instead be located behind the building, accessible but out of sight. Open space should be set aside for landscaped, tree-shaded courtyards and gardens for office workers to use in good weather.

Practice contextualism. A new urban or suburban building is not an island. It should reflect (and, if possible, strengthen) the scale, character, and uses of nearby blocks, roadways, and open space. Disregard for this principle was what caused so many urban renewal projects of the 1950s and 1960s to fail so miserably. Planners of our great cities, often acting with the best intentions, replaced older, tightly knit neighborhoods characterized by low- and moderate-income housing with towers whose scale and character are totally different from those of the surrounding neighborhoods. Now, bold civic leaders (in Newark, New Jersey, for example) are replacing high-rise slums with low-rise developments that complement the existing urban fabric.

Use the landscape to create physical structures that will unify a community and give it identity. In Irvine, California, a residential development called Woodbridge is surrounded by a berm that visually separates it from adjacent developments. Its enhanced landscape and infrastructure—including sidewalks, bike lanes, a broad parkway strip, neighborhood parks, and two man-made lakes—create a strong community identity within Orange County's cookie-cutter suburbs.

Of course, some skeptics will say that land-based planning and design is too expensive. This is not true. The initial cost of protecting open space (whether it's an urban plaza or a rural hillside) is usually paid back many times over in the form of increased property values and/or rents.

Land-based planning and design principles enrich our lives, enhance the public realm, and benefit property owners. They help to guarantee that spaces like the forbidding Boston City Hall Plaza will never be built again. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk, if possible) to Speak Out, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive final text approval.*



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CIRCLE 11 ON INQUIRY CARD

MENTORS Organizational peer reviews can offer architecture firms a reality check and an opportunity to improve their practice.

Roger C. Brady, AIA, is manager of loss-prevention services for DPIC Companies, Inc., of Monterey, California, a leading liability insurer of architects and engineers. He was active in architectural practice for 18 years in California and Ohio.



ARCHITECTURAL RECORD asked Roger C. Brady, AIA, to discuss the process of peer review.

Traditionally, architects—and professionals in general—have shied away from outside involvement in managing their practices. Typical reasons include that the firm is too small or too unique; that there is no time (or money) for such involvement; that the necessary information can be gleaned from a book; that the firm's practices are too personal; and that no outsider could understand a firm the way the principals do.

But this attitude has begun to change. Architects are more apt to seek outside assistance in order to keep pace with the increasingly information-overloaded, complex, competitive, and quality-conscious environment in which we practice. To work "faster, better, and cheaper" requires new ideas, tools, and, most important, execution (in other words, improving your practice).

One of the best and most cost-effective aids to improving your practice is organizational peer review, a tool to help you reexamine your firm's goals, objectives, policies, and procedures and to determine your ability to deliver high-quality design services. It provides a reality check that compares what you want to do with what actually happens on a day-to-day basis.

Peer review in a nutshell

Dave Hoffman, FAIA, of Law/Kingdon, Wichita, Kansas, is the chair of the AIA's practice management PIA and, for the past four years, the institute's liaison to the joint AIA and American Consulting Engineers Council peer review steering committee. He sums up the process of peer review as follows:

As the managing principal of a firm, you select from a list of trained architect volunteers compiled by the AIA—noncompeting, geographically safe peer reviewers with extensive experience in managing architectural firms (not management consultants). You select a mutually agreeable review date.

The review itself addresses the following management areas: general management, management quality, projects, computer systems, professional development and human resources, finances, and business development.

Your reviewers read information that you provide, observe your operations, ask questions, listen to staff members, and ask and listen some more. Strict confidentiality is maintained. Finally—after a few days in most cases—reviewers give you (and your firm, if you like) a verbal report that points out issues (and perhaps blind spots) you should consider addressing to improve your practice.

What's in it for the firm?

As a very interested third party, my company strongly endorses peer reviews; we even help our policyholders pay for the process. We base our support of peer reviews on several factors.

First, we are convinced that, following a peer review, a firm is likely to be better managed and therefore a better professional liability risk.

Second, firms that have completed peer reviews give the process a score of 90–95 on a 100-point scale. In addition, most firms that have had peer reviews request follow-up reviews as soon as they are eligible.

So far, 25 percent of our largest policyholders have completed a peer review. Based on DPIC's involvement on the peer review committee, we see the AIA and ACEC commitment to peer review growing, along with the number of professional associations and organizations that endorse the program (12 as of this writing).

As a company, we strongly support the process, and we put our money where our priorities are. Happily, a few other professional liability insurers have followed our lead (although to a lesser extent), providing further evidence of the program's value.

Peer review can bring about positive changes that can lead to improved loss prevention. These days, when architects must analyze the cost benefit of everything they do, my company remains committed to this practice aid. I encourage you to take advantage of the unique benefits provided by peer review. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, 1221 Avenue of the Americas, New York, N.Y. 10020; by fax to 212/512-4256; or by E-mail to rivy@mcgraw-hill.com. Submissions may be edited for space and clarity.*

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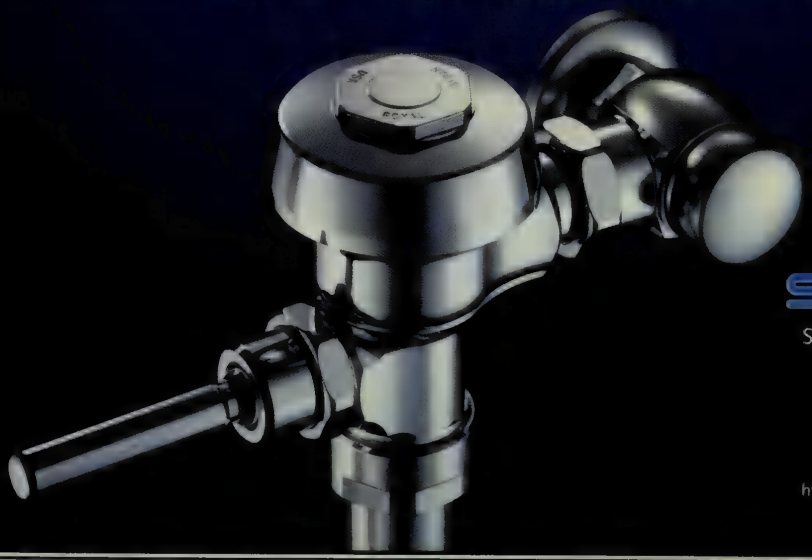
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CIRCLE 70 ON INQUIRY CARD

PULSE RECORD readers were asked: Should the AIA charge members $50 a year to support a national advertising campaign?

NO: 55% YES: 45%

No: Advertising has been the primary force in destroying our sense of community, our sense of place, and our understanding of architecture. For the AIA to engage in "national" advertising would be to embrace the total destruction of architecture.
—Marlene Donnelly
via E-mail

No: I fully support the idea of the AIA's national advertising campaign but do not believe it should be paid for through a special charge. High-priority items should be funded by the institute's normal operating budget, not special charges.
—Thomas Braham
Perkins & Will
Chicago, Ill.

No: When I hear of a proposed increase in AIA fees, I cannot help but think of the questionable "benefits" of membership. I believe in the advantages of participating in a political agenda, but I am confident that the AIA wastes at least $50 a year per person on junk mail to its members.
—Gary R. Nunley, AIA
via E-mail

No: This nebulous enterprise of increasing the "public awareness of architecture" seems an exercise in fuzzy thinking. What are the goals? How will success be measured? Other than fattening some ad agency's bottom line, how will this campaign benefit the practice of the average architect? I have very little confidence that running TV ads will result in anything but cheapening the image of the profession.
—Carl Mezoff, AIA, PE
Stamford, Conn.

Yes: The $50 is a small price to invest in educating the general public about the services and benefits of working with an architect. If this proposal was posed to attorneys, accountants, engineers, doctors, or any other professional group, there would be no discussion: it would just happen, as it should. But architects are a different breed; too many lack long-term vision concerning business and financial matters.
—Richard Peter Kraly, AIA
Shaker Heights, Ohio

Yes: $50 is not enough to ask for an advertising campaign whose goals are to present a strong, positive image of AIA members, illustrating the capabilities, skills, and value they bring to their clients and the general public. I predict that the campaign will be overwhelmingly approved by the membership at the convention in May, and that in the first week such advertising is aired on national television, all architects who are not AIA members will want to join just to be part of the positive impact it has the potential to create.
—Martin Santini, AIA
President, Ecoplan
Englewood Cliffs, N.J.

Yes: How long will we architects continue to bury our heads in the sand and pretend that clients will hire us simply because we believe it is the right thing for them to do? Unless we educate the public, from business leaders to elementary school children, on the importance of our services, our project coffers will continue to be diminished by other professionals with more competitive marketing strategies.
—Craig A. Duncan
San Antonio, Tex.

This Month's Question

Should the unbuilt work of significant designers be resurrected and constructed by contemporary architects?

The public seems to have an unquenchable interest in the work of certain noteworthy architects of the past, particularly Frank Lloyd Wright. But how appropriate is it to take plans intended for another era and execute them today? Can subsequent generations fully realize the details of the original design, as well as assimilating the inevitable changes in program or execution prompted by shifting codes, site constraints, and budgets?

Should the unbuilt work of significant designers be resurrected and constructed by contemporary architects? ☐ Yes ☐ No

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CIRCLE 13 ON INQUIRY CARD



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CIRCLE 14 ON INQUIRY CARD

EXHIBITIONS Body buildings: Three disparate exhibitions explore the relationship between architecture and the human body.

BY DONALD ALBRECHT

A. G. Rizzoli: Architect of Magnificent Visions. San Francisco Museum of Modern Art. *Through May 24.*

Fabrications: The Tectonic Garden. Museum of Modern Art, New York. *Through April 28.*
Fabrications: Bodybuildings. San Francisco Museum of Modern Art. *Through April 28.*
Fabrications: Full Scale. Wexner Center for the Arts, Ohio State University, Columbus, Ohio. *Through April 12.*

Alvar Aalto: Between Humanism and Materialism. Museum of Modern Art, New York. *Through May 19.*



A. G. Rizzoli: *Mother Symbolically Recaptured,* a work done in 1937 after the death of his mother.

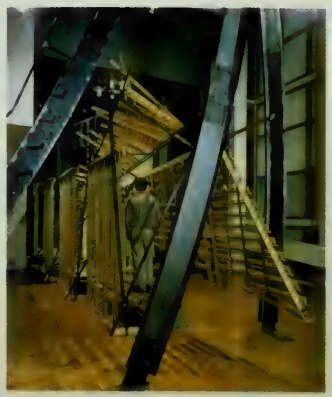
Filmmakers digitize it, geneticists try to clone it, and scholars study its tattoos and piercings for clues about gender identity. Contemporary culture's preoccupation with it—the human body—is the subject of three current architectural exhibitions that explore the relationship between bodies and buildings.

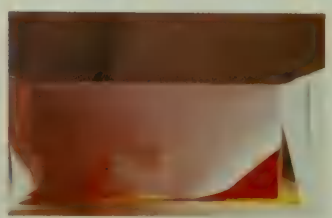
The fantastic architectural drawings of A. G. Rizzoli (1896–1981) are the focus of a compelling exhibition at the San Francisco Museum of Modern Art (SFMOMA). Rizzoli's phallic Art Deco skyscrapers and florid Gothic cathedrals were architectural embodiments of people the artist knew and his own private experiences. "Fabrications," a collaborative trio of shows presented simultaneously at SFMOMA, New York's Museum of Modern Art (MoMA), and the Wexner Center for the Arts in Columbus, Ohio, simulates the body's experience of real buildings through 12 newly commissioned installations. The best of the new exhibitions, however, is MoMA's superb retrospective "Alvar Aalto: Between Humanism and Materialism," which explores the work of the Finnish architect whose humanist approach produced some of Modernism's most empathetic buildings.

The subject of an exhibition originated by the San Diego Museum of Art and curated by Jo Farb Hernandez, A. G. Rizzoli was a reclusive architectural draftsman in San Francisco who secretly, at night and on weekends, delineated his obsessive visions of buildings. "A. G. Rizzoli: Architect of Magnificent Visions" displays nearly 85 of the artist's ink drawings, including his first major "portrait," *Mother Symbolically Represented/The Kathedral.* Using masonry with elegantly carved Gothic details to symbolize his mother's strength, beauty, and spirituality, the drawing celebrated the birthday of his beloved parent. (Rizzoli's mother was a recurring subject of his art: a 1937 drawing "symbolically recaptured" her after death.) More obvious in its symbolism is *The Primalglimse at Forty,* in which a soaring, multitiered tower commemorated the artist's sudden, middle-aged understanding of the sexual act upon glimpsing the genitals of a neighbor's young daughter. Even Rizzoli's utopian cities resonate with personal meaning. Inspired by the axial, Beaux-Arts designs of the 1915 Panama-Pacific Exposition, Rizzoli's Y.T.T.E. (pronounced "it-ty") was an imaginary Oz where the childlike artist could find sexual release: Y.T.T.E was an acronym for Yield to Total Elation.

"Fabrications" is an "exquisite

Fabrications: Mockbee/Coker Architects at the Wexner (below); Kennedy & Violich in S.F. (bottom).





Donald Albrecht is working on exhibitions for the Cooper-Hewitt Museum and the National Building Museum, and an exhibition on Grand Central Terminal.

corpse" in the guise of contemporary installation art. ("Exquisite corpse" was a game played by the Surrealists in which a drawing was produced by artists adding elements sequentially.) According to the project's three curators—SFMOMA's Aaron Betsky, MoMA's Terence Riley, and the Wexner's Mark Robbins, the exhibition comprises "divergent forms joined by a common structure. The outcome is still a body, but one in which unexpected and provocative links are the rule."

"Fabrications" departs from the architecture exhibition's customary reliance on models, drawings, and photographs, using full-scale installations to suggest to visitors the corporeal experience of architecture. The idea for the show was inspired by mock-ups on building sites and full-scale casts of historic buildings displayed in museums.

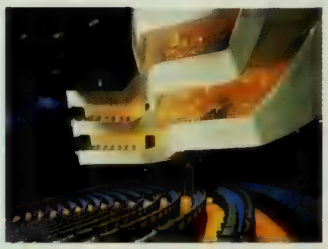
The New York and Columbus installments are less about the body than materials, space-making, and the poetics of construction. MoMA's installment, "The Tectonic Garden," formally relates to elements in the museum's outdoor sculpture court, investigating the expressive potential of such materials as folded aluminum and woven metal mesh. The participating designers were Alfred Munkenbeck, Enrique Norten of TEN Arquitectos with Guy Nordenson, Maria Ponce de Leon and Nader Tehrani of Office dA, and Henry Smith-Miller and Laurie Hawkinson. At the Wexner Center, one of Peter Eisenman's galleries is respatialized by introducing steel bleachers, acrylic sheets, a wood-and-metal ramp, and a wood cottage. The installment "Full Scale" shows work by Sam Mockbee and Coleman Coker, Eric Owen Moss, John Patkau and Patricia Patkau, and Stanley Saitowitz.

The San Francisco show, "Bodybuildings," cleverly draws direct connections between the viscera of buildings and human bodies. "By making a shelter, a frame, or a defined place for ourselves," curator Aaron Betsky says, "we are in essence building a second, fabricated version of ourselves." Four groups of architects—Craig Hodgetts and Ming Fung, Sheila Kennedy and J. Frano Violich, Rob Wellington Quigley, and Byron Kuth and Elizabeth Ranieri—have created a hybrid installation with elements that serve as analogies of the museum's internal systems.

Visitors enter the exhibition through a peeled-away section of the building. Like a three-dimensional version of Marcel Duchamp's *Nude Descending a Staircase* (an image likened by one critic to an explosion in a shingle factory), a tumult of drywall, plaster, lath, and plywood around an exposed fireproofed column reveals the museum's "somatic" body—or the body as physical entity. In the main space, visitors open the mouth of a giant fabric lung and feel the cool breath of the building's air-conditioning system. Layers of soft felt placed along the side of the space are sculpted to create womblike pockets for sitting and lying down, supporting the body in repose. A pile of discarded drywall and metal studs in a corner of the gallery are the exhibition's excretions. "Together," Betsky says, "the pieces present a monumental version of the body that both enlarges it to a grand scale and makes the built institution seem more human."

Without the literal references of "Bodybuildings," Alvar Aalto conceived buildings that also had powerful relationships with the human body. Curated by Peter Reed, "Between Humanism and Materialism" combines drawings, models, and photographs to present nearly 50 buildings and projects, representing every phase of Aalto's career, from 1917 through his death in 1976. Five video walk-throughs provide visitors with an opportunity to savor the spatial qualities, natural settings, and light of Aalto's work. Like a tactile map of the senses, the exhibition's lucid installation flows in an open Aaltoesque way and features tangible examples of Aalto-designed materials—cobalt-blue tiles and sand-textured bricks—with a series of full-scale mock-ups. The exhibition demonstrates how Aalto tempered machine-age rationalism with a humanist concern for bodily comfort, sensuousness, and pleasure. The biomorphic shapes of Aalto's buildings and furnishings curve like the human body, and in his hands brick and wood seem to retain organic properties.





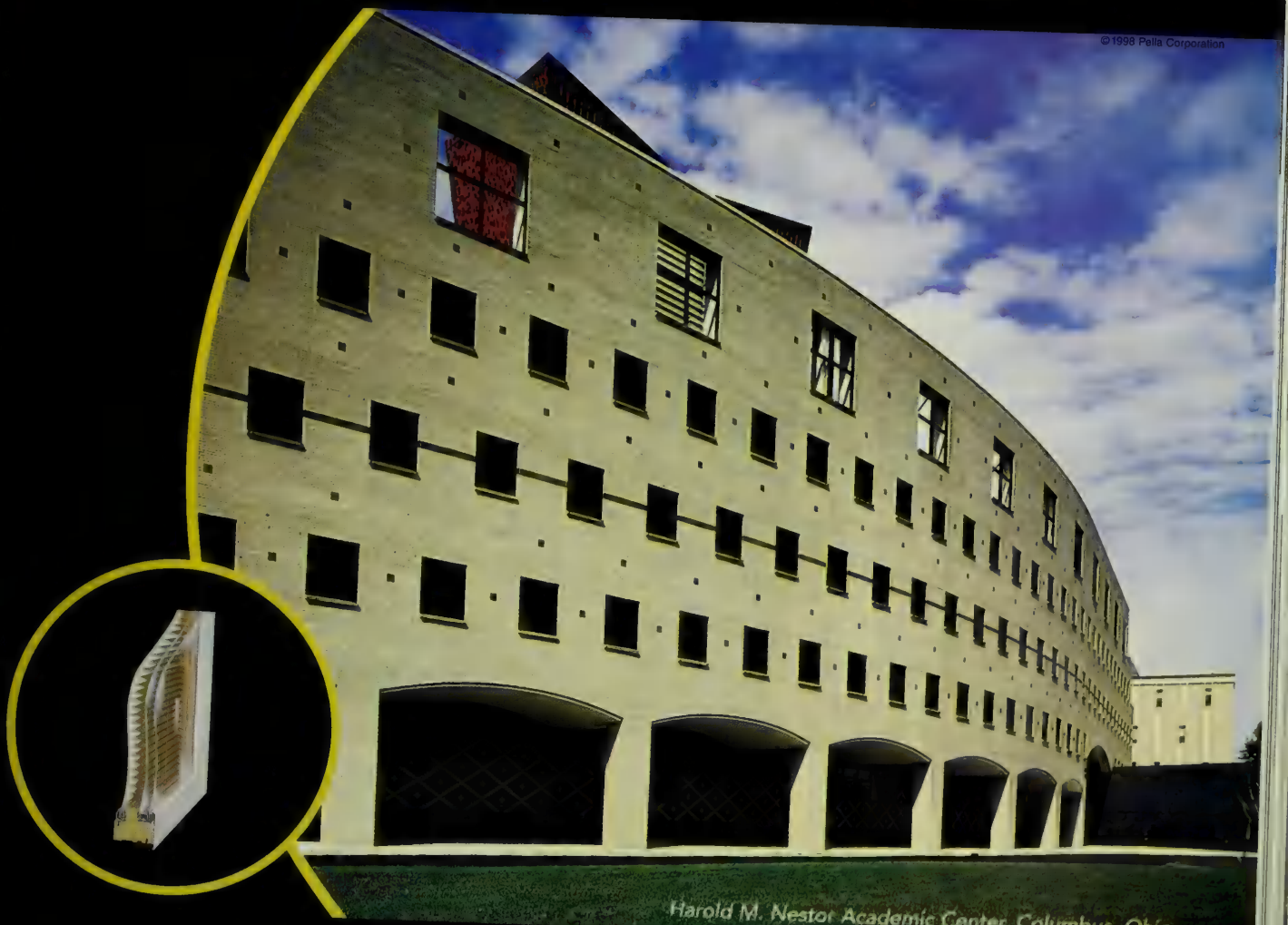
Aalto: Kiosk with advertising pillars for ■ 1929 trade fair in the city of Turku (above); the Opera House in Essen, Germany, built in 1959.

The patients' rooms in the Paimio Tuberculosis Sanatorium (1929–33), for example, were especially sensitive to environmental concerns. Louvers shielded sunlight coming through large windows. The floor angled up at the window to create a softly lit zone, mediating the exterior's bright light and the interior's darker illumination. Aalto also designed washbasins that minimized the noise of running water in the double-occupancy rooms.

Aalto saw public buildings as comparable to the vital organs of the human body and stressed their psychological role in the health of both cities and society. To this end, his cultural centers, town halls, and schools featured light-filled gathering spaces, grand theaters, and planted courtyards. Aalto's buildings related to the landscape like bodies rooted to the ground, explaining both his aversion to housing people in multistory residential towers and his development of site plans that grow organically from the earth. "There is always something," as Aalto said of Frank Lloyd Wright's architecture, "which reminds us of the unknown depths of our being." ■

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CIRCLE 16 ON INQUIRY CARD



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CIRCLE 18 ON INQUIRY CARD



TO COMPENSATE FOR A LOST LANDMARK, FEDS MAKE WAY FOR PENN STATION

The long-hoped-for conversion of New York City's General Post Office into a new home for Pennsylvania Station will go forward, since the U.S. Postal Service agreed last month to relinquish enough space in the McKim, Mead and White–designed landmark to make the project feasible. The impressive size of the post office, with its monolithic facade and two-block stretch of 53-foot-high Corinthian columns, recalls another of McKim, Mead and White's designs: the post office's more exalted sister, Pennsylvania Station, which once stood across the street.

The latter was demolished amid protest in 1963 to make way for the yawningly ordinary Madison Square Garden amphitheater and office complex that now occupies the site. The rail station was buried underground like an overgrown subway stop, prompting Vincent Scully to lament that where once "one entered the city as a God ... one scuttles in now like a rat."

The still-painful memory of Penn Station's destruction was the chief motivating force behind the lobbying efforts of the Municipal Art Society of New York and Sen. Daniel Patrick Moynihan (D-N.Y.), who made personal appeals to President Clinton for funding for the conversion. Help from high places must have forced the Postal Service's hand: the Farley Building, as it is known, is federally owned, and the Postal Service had not been taking good care of it.

Economics was a factor in the old station's demolition—then-owner Penn Central sold the most glorious train shed in America for its air rights—and economics is behind the conversion of the Farley Building. The new Penn Station envisioned by the Municipal Art Society would not only serve as a gateway for high-speed rail travel along the northeast corridor, but it would also provide a civic space and retail arcade comparable to the successfully restored Union Station in Washington, D.C.

Three teams, led by the architectural firms Beyer Blinder Belle, Skidmore, Owings & Merrill, and Richard Meier and Associates, are in competition for the project, which will be developed jointly by the U.S. Postal Service and the Pennsylvania Station Redevelopment Corporation, a state agency.

Although bureaucratic restraints prevent the parties involved from commenting on the selection process, the president of the Redevelopment Corporation, Alexandros E. Washburn, says, "We insisted on having architect-led teams for this project. The architecture is an extremely important commitment that goes back to Senator Moynihan's vision of the world." *Ellen Kirschner Popper*

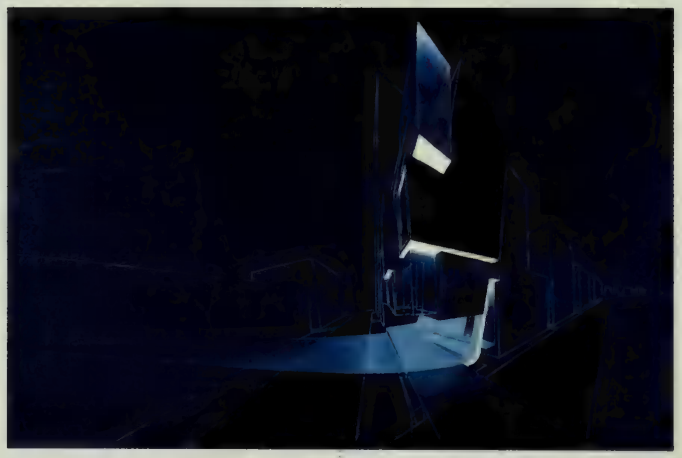
IN CINCINNATI, HADID GETS HER FIRST AMERICAN COMMISSION

In the design competition for its future home, Cincinnati's Contemporary Arts Center (CAC) wanted to find an architect with whom it could explore possible outcomes—much the same way the museum develops site-specific works with artists. Last month the CAC selected Zaha Hadid, an architect known less for her limited number of built projects than for her computer-generated models of buildings that appear to be exploding. The CAC will be the London-based architect's first project built in the United States.

In the final round of competition, Hadid, Bernard Tschumi, and Daniel Libeskind were given only two weeks to come up with a 12-page sketchbook of ideas for what will be a five-story, 65,000-square-foot building at the corner of Sixth and Walnut Streets (across Walnut from Cesar Pelli's Aronoff Center for the Arts).

The selection committee was most intrigued by Hadid's proposed jigsaw configuration of floor space, which creates intimate as well as larger galleries, with administrative offices interspersed among them. Some spaces are conceived as vertical, reaching up two or three stories. The ground floor will be open to the upper floors where, as seen in the massing model (below), activity is to be concentrated.

Among the constraints the architect will be working with as the design develops over the next several years is the tight floor space, the necessity of putting the loading dock on one of two sides facing the street, and a $25 million budget. *David Simon Morton*



ARCHITECTURE FILMS ON THE ROAD AND ON-LINE **In January, the Brooklyn Museum hosted Architecture on Screen '98, featuring documentaries on prominent architects—Peter Eisenman, Carlo Scarpa, and Louis Kahn among them—and experimental films on urban and environmental topics. The festival is the first in the United States to be devoted to architecture and will make stops in Washington, D.C., this spring and Houston this fall.**

The program was sponsored by the Pratt Institute's Program for Art on Film, which has compiled a research database with more than 25,000 film and video titles on architecture, painting, photography, decorative arts, and costume. The database is now accessible via Art on Film Online (www.artfilm.org), [illegible] is the program's newsletter, an art and architecture discussion group, and lists of other sites of interest to artists and architects. ***Donna Goodman***



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DO CULTURES CLASH OR CLICK AT NEW ZEALAND'S NATIONAL MUSEUM?

In February, New Zealand's national museum, Te Papa, Maori for "our place," was inaugurated in the capital city of Wellington. Its design was intended to convey the essence of this officially bicultural nation. It incorporates the sensibilities of both the Maori, a Polynesian people whose ancestors made New Zealand home 1,000 years ago, and the descendants of Europeans, or Pakeha, who settled eight centuries later and now make up almost nine-tenths of the population.

Like a *marae*, the traditional Maori meeting house, Te Papa reaches toward the most open part of the landscape, Wellington's harbor. The rear is enclosed by the city's waterfront, soon to be redeveloped; architecturally speaking, this affords the building little contextual comfort. The urban enclosure also serves as a reminder of the Pakeha's impact on the landscape.

As the first building of national significance that New Zealand architects have been asked to design in 50 years, the $80 million museum, by JASMAX of Auckland, has garnered its share of comments. Apart from select *marae*-inspired flourishes, Te Papa shows little kinship with traditional regional or even Modernist styles. Instead, its final form may be more a synthesis of architects' and curators' responses to the explicitly bicultural program. Critics have said that the typical "black box" exhibition spaces preferred by curators necessarily create blank exteriors. Maori and European exhibits, which are segregated, come into contact somewhat cautiously at a key wedge-shaped space that simultaneously links and separates them.

Te Papa is most expressive, however, when viewed as a jagged, advancing promontory from the harbor—which both the Maori and the Europeans had to cross to reach their new home. *Steve Bohling*





SCHWARTZ/SILVER GIVES NEW ENGLAND AQUARIUM EXPRESSIVE NEW WING

The New England Aquarium's west wing is nearing completion on Boston's waterfront. The $20 million, 17,000-square-foot addition is the first step in a planned $100 million transformation designed by Boston Architects Schwartz/Silver.

Phase one of the expansion replaces the entrance to the original building, designed by Cambridge Seven in 1969, and adds a café, a large gift shop, and a two-level exhibition area. A prominently placed pool of playful seals immediately engages approaching visitors.

The institution is rethinking its agenda, and the new wing is meant to express the change. The 1969 building—with the well-known great cylindrical tank and its helical ramp—will remain at the core of the new complex. But the aquarium will now turn its focus outward, and the architecture will convey a more active connection with the rest of the world, carrying the eye through and across exhibits toward Boston Harbor.

The new design required reviews and approvals by no fewer than 16 agencies. Making a virtue of necessity, the architects emphasized the multiple zoning envelopes that slice across the site. The new wing's chaotic-looking but highly organized arrangement of nonrectangular forms recalls the work of Frank Gehry, with whom Schwartz/Silver have collaborated in the past. But those familiar with the firm's work will recognize its distinctive style in the addition.

The building contains multiple references to sea and sealife. The stainless-steel siding forms overlapping "scales." More scales, of translucent fiberglass, cover the gift shop ceiling, where they are angled to permit glimpses of the ultramarine ducts and beams above. Flooring of epoxy terrazzo is a maritime blue. Round air vents cling to an interior wall like barnacles. A convex wood ceiling above the sales counter evokes the hull of a skiff. And tiny silver speedboat light fixtures are attached to the glass-walled ticket booth. *Jonathan Hale*

ARCHITECTS OF SEGREGATION DISCUSSED AT HARVARD SYMPOSIUM **While architects have historically escaped blame for the building of segregated communities, they received at least some criticism of their work in "The Architecture of Segregation," a symposium held last month at Harvard's Graduate School of Design. Panelists argued that architecture has not only kept people apart, most obviously in the form of separate facilities for blacks and whites, but has also given social inequality a solid form more permanent, even, than law.**

In the cities of the antebellum South, the homes of slaves had windows only on the side facing the slave owner's property; window frames, not windows, lined the wall facing the public street. The architects of 1960s housing projects isolated people in towers barren of the humanizing qualities—small scale, sculptural relief—that characterized the work of black architects like Hilyard Robinson, who built housing for the urban poor in the 1930s.

Randy Swearer, an architect who teaches at the University of Texas at Austin, spoke out against the recent and rapid proliferation of gated communities, which make for neighborhoods that are exclusive both by class and by race. Stressing the complicity of architects in the work of developers, Swearer called on the American Institute of Architects to adjust its standard of ethics to include issues of segregation. "We need to be critical of this practice, and I don't think the design community has been particularly good at that." *D.S.M.*

42ND STREET PROJECT ADVANCES WITH MOVE OF HISTORIC THEATER

With pomp and circumstance befitting a unique urban event, the landmark Empire Theater was relocated last month from its midblock site on 42nd Street in New York City's theater district to the corner of Eighth



Avenue—a move of 170 linear feet.

The Empire stood directly in the way of a planned 25-screen American Multi Cinema. The local development authority demanded that the theater be preserved, so after being restored by architects Beyer Blinder Belle, it will stand on the corner as a dramatic portal for the movie complex. Two other historic theaters, the Harris and the Liberty, will also be incorporated into plans to develop most of the block facing 42nd Street as a 335,000-square-foot entertainment, retail, and restaurant complex.

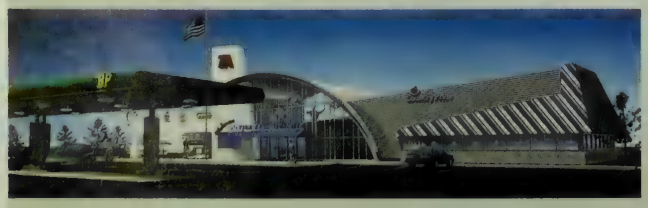
The elegant Empire, with its arching glass facade and domed interior featuring eclectic molded plaster details, was built in 1912. It housed legitimate theater until the Crash of 1929, when it became the Eltinge, a burlesque haunt. It was rechristened the Empire in 1954.

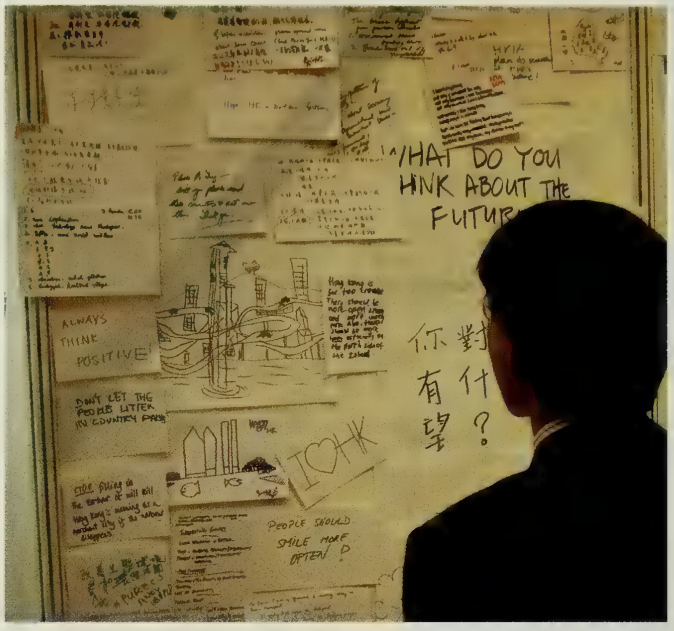
The mechanics of the move were extremely complex. A latticework of eight steel tracks was laid over a concrete pad supported by piles driven into the bedrock. Over the tracks, 250 continuous pile caps were placed on sledlike rollers. A flotilla of hydraulic jacks lifted the building just enough to slide it onto the rollers. A second horizontal hydraulic ram system moved the 3,700-ton building to its new location, a process that took five hours.

Beyer Blinder Belle coordinated the move by Urban Foundation/Engineering under the supervision of Lehrer McGovern Bovis. The move cost $1.4 million. *E.K.P.*

NOT JUST ANOTHER ROADSIDE ATTRACTION **When TravelCenters of America commissioned van Dijk Pace Westlake Architects to design a prototype "travel center" in 1995, there was one catch: the design would be accepted or rejected based on market research. The Cleveland-based firm would upgrade 125 truck stops in 36 states if its design was approved. To perfect their design, the architects visited truck stops across the country and identified key structural elements, such as awnings and mansard roofs, that evoke the American diner.**

Drivers overwhelmingly approved the firm's contemporary design, whose lines, lighting, and colors lent an inviting, clean, and safe quality to these roadside havens. Each 30,000-square-foot travel center features dining areas, a video arcade, a business center, and a store. Karen Skunta & Company in Cleveland created graphics for the prototype. Ten prototypes will be completed in 1999, and van Dijk Pace Westlake has created plans for remodeling 88 existing sites. ***Susan R. Bleznick***





IN ERA OF ERODING DEMOCRACY, HONG KONG HOLDS ITS FIRST PUBLIC CHARRETTE

Even before Hong Kong's July 1997 handover to China, the city's public had little say in the urban planning process. Decisions were tightly controlled by the government and implemented by a cadre of private developers. Since the handover, the territory has seen some of its democratic rights and freedoms erode. Given this climate of diminished public participation in government, it is notable that in February a group of architects, developers, students, lawyers, teachers, and politicians held Hong Kong's first public design charrette, Designing Hong Kong.

Fifty people in three teams worked over two days to generate ideas for redeveloping the harborside airport site once the airport is closed in July. This 2,200-acre site, about two-thirds of which is planned landfill, is centrally located and potentially the most valuable real estate in the territory.

The charrette took place in rooms with open ceilings in the atrium of Pacific Place, a shopping mall, allowing the public to watch from above. An exhibit designed by students at the Chinese University of Hong Kong detailed the recent history of Hong Kong's growth. Passersby were invited to write comments on notecards.

Because of the historical lack of public participation in the city's development process, the event's organizers worried that the public would take no interest. "Of course people in Hong Kong have ideas about their city," says organizer Christine Loh, chair of the fledgling Citizens Party. "It's just that no one ever asked them." Indeed, after two days the exhibit panels were covered with hundreds of responses.

The following day a symposium presented the charrette results and included lectures by local and international experts, with a keynote address by architect Cesar Pelli, FAIA. While the charrette schemes covered a range of ideas, there were some common themes: minimizing landfill, a high dependence on public transportation, and ultrahigh-density buildings with uses mixed by level.

The fate of the airport site is unresolved. But the organizers of Designing Hong Kong are hopeful that they will influence the government's plan and that by inspiring participation, they might shape both the outcome and the process of urban development. *Jack Robbins*



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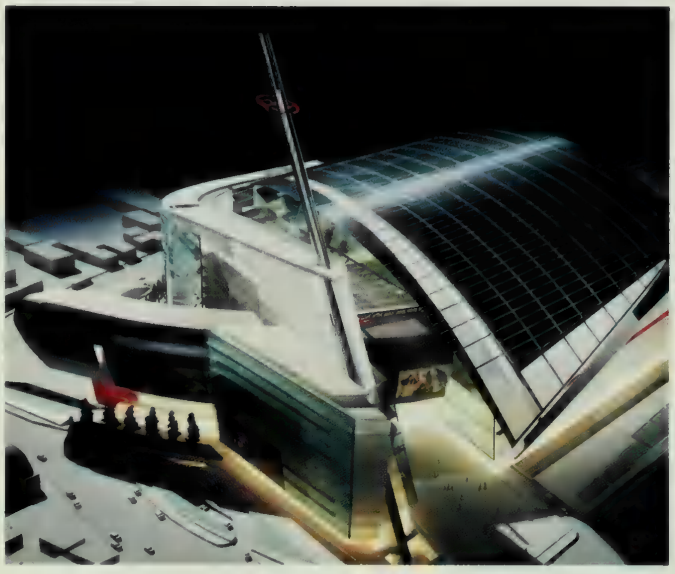
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FOCUS ON: STADIUMS AND ARENAS

America outmarveled The 1989 debut of Toronto's SkyDome, a high-tech, multifunctional entertainment machine featuring a hotel, a retractable roof 33 stories high at its apex, and Earth's largest JumboTron screen, established the new paradigm for sporting facilities—except in the United States. Since the 1992 opening of Camden Yards in Baltimore, American stadiums and, increasingly, arenas have been designed to look and feel like those of 70 years ago. Everywhere else, though, the kinds of new functions and new technologies introduced by SkyDome are a natural fit for venues that look more and more like landed spacecraft. While American sports fans can relive an idealized past at the game, other fans worldwide are stimulated by the marvels of a futuristic full-service world built for their pleasure. *—D.S.M.*



Le Stade de France The 1998 World Cup venue was completed this year in St. Denis, a Paris suburb. Five acres' worth of laminated glass constitute the roof, which floats above the stadium on 18 slender posts. The roof muffles sound and repels UV rays while allowing natural light into the stadium. Architects: Macary, Zublena, Regembal, Costantini.



Seoul Dome LG Group, the South Korean conglomerate, intends to build nothing short of a "city landmark" with this multisport, multifunction facility. The dome will host 2002 World Cup games and thereafter will be the home field of the LG Twins baseball team. The complex will also include 2 million square feet of convention halls, restaurants, banquet facilities, cinemas, and stores. Architect: NBBJ—Peter Pran and Dan Meis, design principals; Mike Hallmark, principal-in-charge.

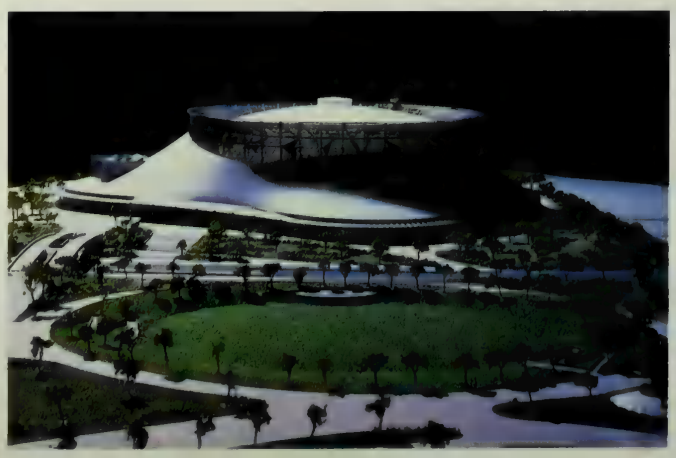
Olympic Velodrome and Swimming Hall Berlin lost its Olympic bid, but it still built these minimalist monuments in a gloomy part of the city. The perfect circle of the velodrome and the rectangle of the swimming hall hide most of the bulk below grade, limned by apple trees above. Architect: Dominique Perrault.

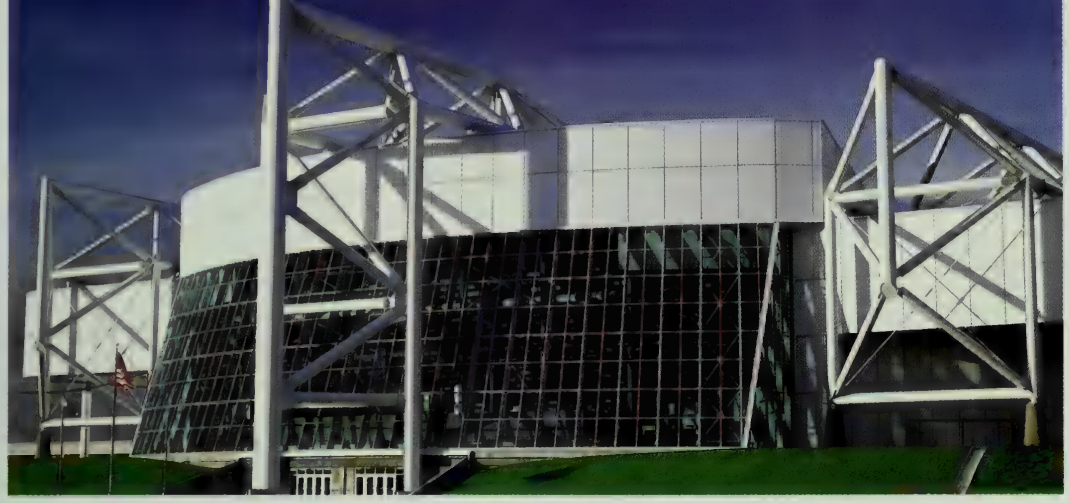


Kumamoto "Buoyant Cloud" Stadium This domed stadium was completed last year in Kumamoto City, Japan. The doughnut-shaped roof, filled with air and supported by cables, forms a "cloud" that allows more open space beneath. The roof material is translucent, obviating the need for artificial light in the daytime hours, and also refracts sound, cutting down on interior noise. The hole at the center provides natural ventilation. Architect: Teiichi Takahashi, Dai-ichi Kobo Associates.



Ali Sami Yen Stadium This new home for Turkey's storied soccer club, Galatasaray, will be Istanbul's biggest soccer stadium when completed in 2000. It seats only 45,000 spectators but incorporates stores, an office building, apartments, and a six-screen theater complex. Architects: Stadium Consultants International and Brisbin Brook Beynon.





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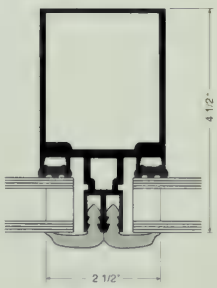
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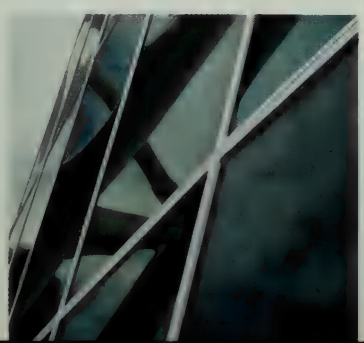
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VIEWERS BECOME PARTICIPANTS IN NEW PREDOCK MUSEUM AT SKIDMORE COLLEGE

The Tang Teaching Museum and Art Gallery at Skidmore College in Saratoga Springs, New York, will be a flexible 30,000-square-foot space that celebrates the college's emphasis on interdisciplinary studies. Designed by Antoine Predock and due for completion in the fall of 1999, the building dispenses with the spatial hierarchies of the traditional display-oriented museum. Instead, its multiple entrances and circulation routes, multipurpose spaces, and large curatorial facilities and classrooms treat visitors as participants in a performance space that continually reinvents itself.

Set within a circle of majestic pines at the center of campus, the museum is a dynamic anchor for the college, its multiple arms radiating out from a central node toward main pedestrian circulation axes. Movement around, through, and over the building's many coves and protrusions is a voyage of discovery as the viewer gains fresh perspectives on the structure itself, the surrounding landscape, or the art inside when glimpsed through a window from a rooftop deck. One staircase climbs a sloping sod-covered classroom roof planted with wild grasses; another undulates downward for 100 feet along delicate scaffolding, like a roller-coaster to a picturesque pond.

Themes of transparency and dissolving boundaries are concretized in the many sightlines through multiple interior spaces. Between the curatorial area and the lobby, a wall of glass cubbies filled with objects serves to meld the typically separate domains of storage and display, private and public.

The museum's adaptable spaces can accommodate a wide range of art, from ancient Chinese painting to works based on evolving technologies, and can integrate related dance, poetry, or music programs. Earth berms embracing layers of exposed bedrock on the museum's perimeter provide intimate amphitheaters for classes, performances, and socializing. *Andrea Truppin*

NCAA CHOOSES MICHAEL GRAVES FOR ITS HEADQUARTERS IN INDIANAPOLIS

Hoosier architect Michael Graves has returned home to design the National Collegiate Athletic Association Headquarters and Hall of Champions in Indianapolis. Located in White River State Park, the project comprises a 40,000-square-foot Hall of Champions exhibition space, a 140,000-square-foot, four-story office/conference center, and a library and café in a renovated 19th-century industrial building.

The three structures, clad in earth-colored stone and brick, surround a central courtyard, recalling a college quadrangle. The Hall of Champions asserts itself with giant 45-foot glazed arches and prominent buttresses. The form of the Roman arena, whose circularity inspired the American college sports facility, reappears in the hemicycle behind, which houses the interactive exhibit area. The curve of this two-story space eases the transition to the adjacent office building, whose massive rectangular footprint is skewed to align with the historic building and a canal bordering the site. Offices are grouped around an atrium on the upper floors, with conference facilities on the ground level adjoining the Hall of Champions.

The $35 million complex, developed in conjunction with Schmidt Associates; 1717 Design Group (exhibit designer); Sasaki Associates; and Master Planners of White River State Park, will be completed in phases from 1999 to 2000. *A.T.*



A MODERNIST PARK REOPENS IN BRAZIL **After nearly 40 years of neglect, the Roberto Burle Marx Park in São Paulo, Brazil, has been restored. Brazilian landscape architect Roberto Burle Marx designed the 34-acre park in 1950 as a garden for businessman Francisco Pignatari. The park was abandoned shortly after completion, and it took until the late 1980s for a private developer to take on the repairs. In 1996, two years after its designer's death, the park was reopened as a public space, serving as a rare example of an intact Burle Marx work from the 1950s.**

Since his first garden, planted in Rio de Janeiro in 1932, Burle Marx designed approximately 3,000 works—of which only a fraction have been realized—and collaborated with architects such as Oscar Niemeyer, Richard Neutra, and Le Corbusier, who introduced him to Modernism. The landscape architect is also recognized for his discovery of a dozen Brazilian plants and his efforts in saving native species from extinction.



Burle Marx's early works were brilliantly colored, biomorphic mosaics of grasses, flowerbeds, pools, and walkways. In the 1950s these shapes became more rectilinear, and this park is a seminal example of his Modernist compositions. A main lawn is a precisely delineated checkerboard of dark and light grasses (left); the park also features a grouping of square and rectangular reflecting pools and walls decorated with colorful, geometric tile patterns. A row of Imperial Palms and plants such as the Heliconia Rostrata, with its red, fleshy blooms, provide tropical character. This more "controlled" area is set off by a wilder part of the park, with virgin forest, ponds, and little forests of bamboo.

"In each project Burle Marx sought to find plants that were best suited for the area and to take advantage of the existing site," says Fátima Gomes of the Burle Marx Studio in Rio, which is still in business. The park is managed by São Paulo's parks department and the Aron Birmann Foundation, a private, nonprofit group dedicated to creating and maintaining the city's green spaces. ***Marina Isola***

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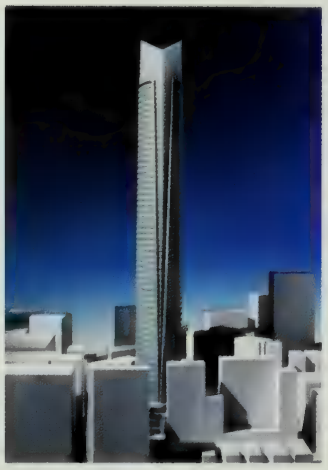
NEWS BRIEFS

Green hotel The first environmentally smart hotel in the continental United States—the 192-room Sheraton Rittenhouse Square—is scheduled to open at the end of this year. EcoSmart Healthy Properties, in a joint venture with the Lubert-Adler Real Estate Opportunity Fund and Carlyle Construction, is converting six stories of Philadelphia's Rittenhouse Regency using ecologically conscious building systems and materials, such as constantly circulating fresh air and nontoxic paints. A bamboo garden will "super-oxygenate" the air, according to EcoSmart president Barry Dimson, giving visitors to lobby restaurants "the sensation of having breakfast on a mountaintop."

Failing grades In its 1998 report card, the American Society of Civil Engineers (ASCE) awarded a D average to America's infrastructure, from mass transit, which was the highest achiever with a C, to schools, which flunked out. Drinking water received a grade of D, not much better than the D- given to hazardous waste. An investment of about $1.3 trillion should fix things, says the ASCE. The 10 categories of public works were evaluated on the basis of condition and performance, need versus capacity, and need versus finding.

Notes from underground Hardy Holzman Pfeiffer Associates recently built the first fully underground performance space in the United States. Vilar Center for the Arts, in Beaver Creek, Colorado, houses a multilevel lobby, a 2,250-square-foot gallery, and a 530-seat theater, all tucked beneath an ice rink. Creating a suitable design with the vertical challenges posed by the tight, fixed site led to many technical innovations. For instance, to make up for the absence of a traditional fly tower, which lifts and lowers scenery, the designers gave this theater unusually large stage wings, for horizontal movement of sets.

Max headroom Once Norman Foster's Chek Lap Kok Airport opens in Hong Kong this July, development around the site of the old Kai Tak Airport, in Kowloon, will take to the skies. Where flight patterns now restrict building heights, construction will begin on a 55-story, 800,000-square-foot mixed- use project designed by American firm Leo A. Daly. The tower will stand twice as high as any of its neighbors and afford dazzling new views of Hong Kong's harbor.



Leo A. Daly's 55 story tower, to be built near the old airport in Hong Kong, which will soon close.

Streets of dreams New York City's Fifth Avenue between Tiffany's and Saks commands the highest rents on the planet, with retail space going for $580 per square foot. A survey conducted annually by Equis Retail Group showed that seven of the world's 10 priciest streets are in the United States, thanks to a stable economy and a healthy tourism industry. Oxford Street in London, at $400 per square foot; Paris's Champs Elysées, at $360; the Ginza in Tokyo, at $290; and Hong Kong's Nathan Road (tying for ninth place with Union Square in San Francisco), at $250, also made the top 10.

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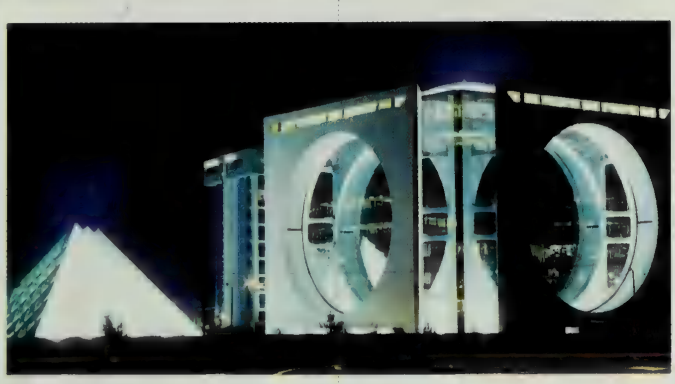
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Alpine Woods In a move to create an "important" place to study architecture in Europe, SCI-Arc has named Lebbeus Woods—a noted architect, illustrator, and theorist—academic director of its Vico, Switzerland, campus. Woods, vowing not to "create America in the Alps," hopes to attract more Europeans to Vico with the Cybernetic Circus, a program studying structures of measurement and performance.

Modernist pioneer dies Architect Alberto Sartoris died on March 9 in the Swiss town of Pompaples. He was 97. Born in Turin, he had lived in Switzerland since fleeing Italy in the 1930s. Sartoris was a founder of the Italian Rationalist movement and designed one of Italy's earliest Rationalist buildings, Turin's Exhibition Pavilion. An organizer, with Le Corbusier, of the first Congrès Internationaux d'Architec-ture Moderne, Sartoris was also identified with the Futurist movement.



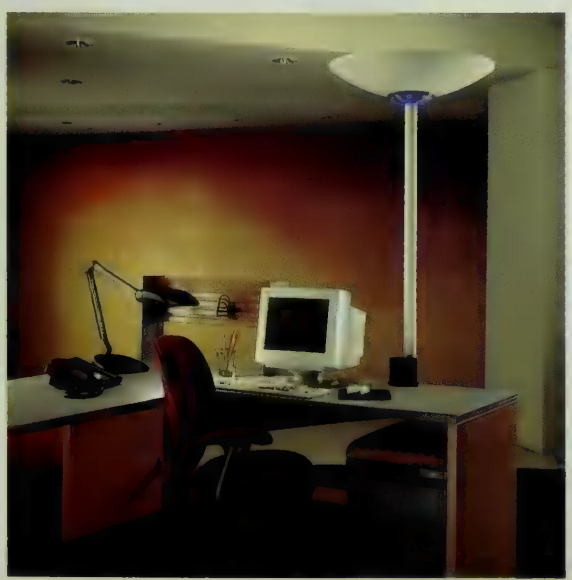
The Calakmul office complex in Mexico City, designed by Augustin Hernandez.

Temple of industry A 400,000-square-foot office complex for corporate giants such as Kraft Foods and Philip Morris was recently completed in Mexico City. Calakmul, an assemblage of geometric forms designed by Augustin Hernandez, draws on Mayan symbolism: the cube of reflective glass alludes to the four compass points; the steel, glass, and concrete pyramid is an offering to the Jaguar god; and the parking garage under the obelisk represents, fittingly, the underworld, home of the Mayan gods of the inferno.

BIG news The most ambitious of several recent public art and urban design projects in Santa Monica, California, will break ground this summer. For the Beach Improvement Group, or BIG Project, artist Judy Pinto and San Diego landscape architects Wallace Roberts & Todd have teamed up to design a major parkland development. This metaphorical theater encompasses a sweeping stretch of California coastline; the Palisades act as a balcony overlooking the drama of the sea and sunset, and the Santa Monica Pier acts as an aisle directing the audience's gaze.

New Safdie in Orlando Moshe Safdie Architects was recently selected to design the new Orlando Performing Arts Complex. The combined teaching and performance space, commissioned by the City of Orlando and the University of Central Florida for a two-block site next to City Hall, is in the master planning phase. Safdie's design creates a "living room" for the city, drawing people and activity downtown. Although Orlando's biggest draw is Disneyworld, this fast-growing city is home to diverse industries and a cultural scene with a whole cast of unlicensed characters. "Orlando owes something to theme parks," says Isaac Franco, firm principal, "but they're not its raison d'être." ■

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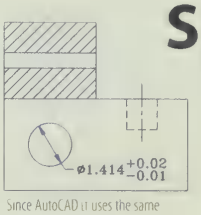
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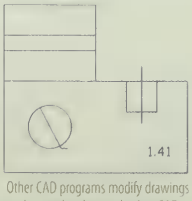
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CORRESPONDENT'S FILE With the economies of Southeast Asia reeling, architects working in the region are facing a difficult future.

BY NIGEL SIMMONDS

Nigel Simmonds is a journalist based in Singapore and Bali who has contributed to RECORD's Pacific Rim section for several years.

The warning signs had been there for years, but for many of us they were little more than inconspicuous maintenance flags on the road to riches. With hindsight, we can see them clearly now: the gleaming skyscraper towering over a carpet of slums in Jakarta; the brand new Mercedes-Benz negotiating a road built for horse and cart in Thailand. The gap between rich and poor, of course, was always stark; the one between reality and wishful thinking was less evident.

For those of us who have known Southeast Asia only in the economic upswing, the last months have been something to behold. A currency crisis has wiped at least 50 percent from the value of most Southeast Asian banknotes: in Indonesia the rupiah slipped from 2,400 to the dollar in July 1997 to more than 16,000 at one point in January 1998 (it now hovers around 10,000 to the dollar.) Stock markets have plummeted across the board as confidence in the Asian "miracle" has waned. Banks, which are central to the problem, have been forced to account for bad loans, easy finance, and chronic cronyism.

So what's going on? According to the Economist Intelligence Unit, the research and forecasting arm of the *Economist* publications, there are two distinct interpretations of the Asian situation. The first suggests that the region's difficulties lie in its foreign-exchange markets and do not reflect an underlying weakness in the economies—a situation that could be solved by a rapid surge in exports.

The second reading suggests that the precipitous slide in the currency and stock markets has exposed and aggravated a number of structural weaknesses. Says the EIU: "These include unsustainable current account deficits, overheated construction sectors, and banking sectors that have lent heavily to finance share purchases and glutted property markets." The problem here is that, with the currency and stock markets continuing to slide, banks face the prospect of bad debts mounting to unsustainable levels. "Failing banks and contracting credit could, in turn, lead to a prolonged slump," says the EIU.



Two by Arquitectonica: Pacific Plaza Towers (left), two 52-story luxury apartment buildings going forward in Manila; and Winsland House (below), completed in Singapore at the end of last year, with full-service apartments and an office complex.

In the shadows of Southeast Asia's problems are "two wild cards: Japan and China," says Francisco Larios, senior emerging markets economist for Standard & Poor's DRI. What happens with these two economic giants will have a great impact on how quickly Southeast Asia is able to revive.

If Japan were to adopt changes to boost domestic demand, it could help Southeast Asian nations revive their economies by exporting more. But "right now Japan isn't playing the role in the region that its economic weight warrants," says Larios. And while China has stayed outside the zone of troubles so far, a devaluation of the Chinese currency or signs of an economic crisis could drag Southeast Asian countries down even further.

As governments have reined in public and private spending to cope with the downturn, building and infrastructure projects in many countries have been the first to go. Many property companies—the pacesetters of Asia's growth

phenomenon—are facing a future that is at best uncertain. As a result, much of the work that foreign architects had relied on to keep them going has dried up.

Even some projects that were well under way have been brought to a halt. For example, construction of the 62-story BDNI Center in Jakarta, designed by the New York–based Pei Partnership, was frozen in early March after it had already progressed past the 10th floor. L. C. (Sandi) Pei says the project will be on hold for perhaps a year, but he expects it will go forward eventually.

Two Pei projects in Singapore that hadn't started construction—a luxury apartment building and an office tower—have also been put on hold. But Pei expects them to begin construction sooner than the Jakarta tower, perhaps within six months.

Looking at the big picture, Pei says, "I feel there is a general optimism about the future of the area but an aversion to the present." In the meantime, says Pei, "the reality is that everything in the region is in a state of turmoil right now."

Development Design Group, a Baltimore-based architecture firm that has been active in Indonesia for several years, reports mixed news from the region as well. Phase I of Legend City, a large master-planned community outside Jakarta, is being completed, as is Mal Puri Indah, an 864,000-square-foot retail center in Jakarta, says Kathleen Carney, communications director of the firm. About a half dozen other projects in Indonesia, however, have been postponed.



This apartment complex in Singapore by Pei Partnership is now on hold.



This entertainment complex in Jakarta by Development Design Group has been postponed.

"We've definitely been hit, but it's not all doom and gloom," says Carney. "No clients have canceled outright" and the firm is maintaining its seven-person Jakarta office. "We're a little more optimistic than what you read in the press," she explains. "We envision things getting going again within a year or 18 months."

A few foreign firms have been able to stay busy in the region by steering clear of the countries that have been hit the hardest. "We have 40 projects under way in Asia right now," reports Bernardo Fort-Brescia, a principal of Arquitectonica International, the Miami-based firm, which has three Asian offices: in Shanghai, Hong Kong, and Manila. "The only cancellations we've had are two projects in Manila. But just this week we got a new project there," Fort-Brescia says.

His firm has been lucky since it has done no work in economically troubled countries such as Thailand, Malaysia, and Korea and just one project (completed at the end of last year) in Indonesia.

For local architects in struggling countries, though, there's nowhere to run. In Indonesia, where a succession crisis is threatening to turn violent and add to the economic woes, one local manager painted a dire picture: "Every major project in the capital has now been closed. Expatriates are leaving in droves, and at one regional bank those executives who are staying on have been issued walkie-talkies, just in case the communication systems go down."

Major casualties so far in Indonesia include the massive Jakarta Tower. "It was supposed to have been the tallest tower in the world—558 meters high, five meters taller than the CN Tower in Toronto," says Mohammad Danisworo, chairman of Jakarta's Architectural Review Board.

The story is the same in the country's other major centers, including Surabaya, where a convention center designed by Tsao & McKown Architects of New York is just one of a number of projects to have hit financial limbo.

"It seems to me the impact of Asia's current economic situation on architects and their business is a very serious one," says Danisworo. "It is not just a 'blip'; it is a major downturn, particularly for projects being financed by local investors."

Indonesia may well be at the sharp end of the crisis for now, but it all began in Thailand. Casualties in Thailand have included such major projects as the $3.7 billion Bangkok Elevated Road and Train System.

The story is not as bad in Singapore, where a massive MRT project seems ready to move ahead. The Lion City has not been immune to the crisis, however: more than half the larger private sites sold in the last two years will not be redeveloped this year. Developers seem to have put their plans on hold to wait out the uncertain market.

Not all of the news is bad, however. In Malaysia the government confirmed in January that it will continue with the construction of a new Malaysian administrative capital called Putrajaya. The total cost? Around 20 billion ringgit (or $3 billion at 6.3 to the dollar). The new town is a major piece in Malaysia's grand plan, unveiled last year before the currency crisis, to build a $33 billion "multimedia super corridor," which will also include high-tech development between Kuala Lumpur and a new international airport designed by Kisho Kurokawa. The airport is now under construction outside the city.

The world's tallest buildings, the twin Petronas Towers in Kuala Lumpur, designed by Cesar Pelli, are essentially complete, although work is continuing on an attached concert hall and shopping mall.

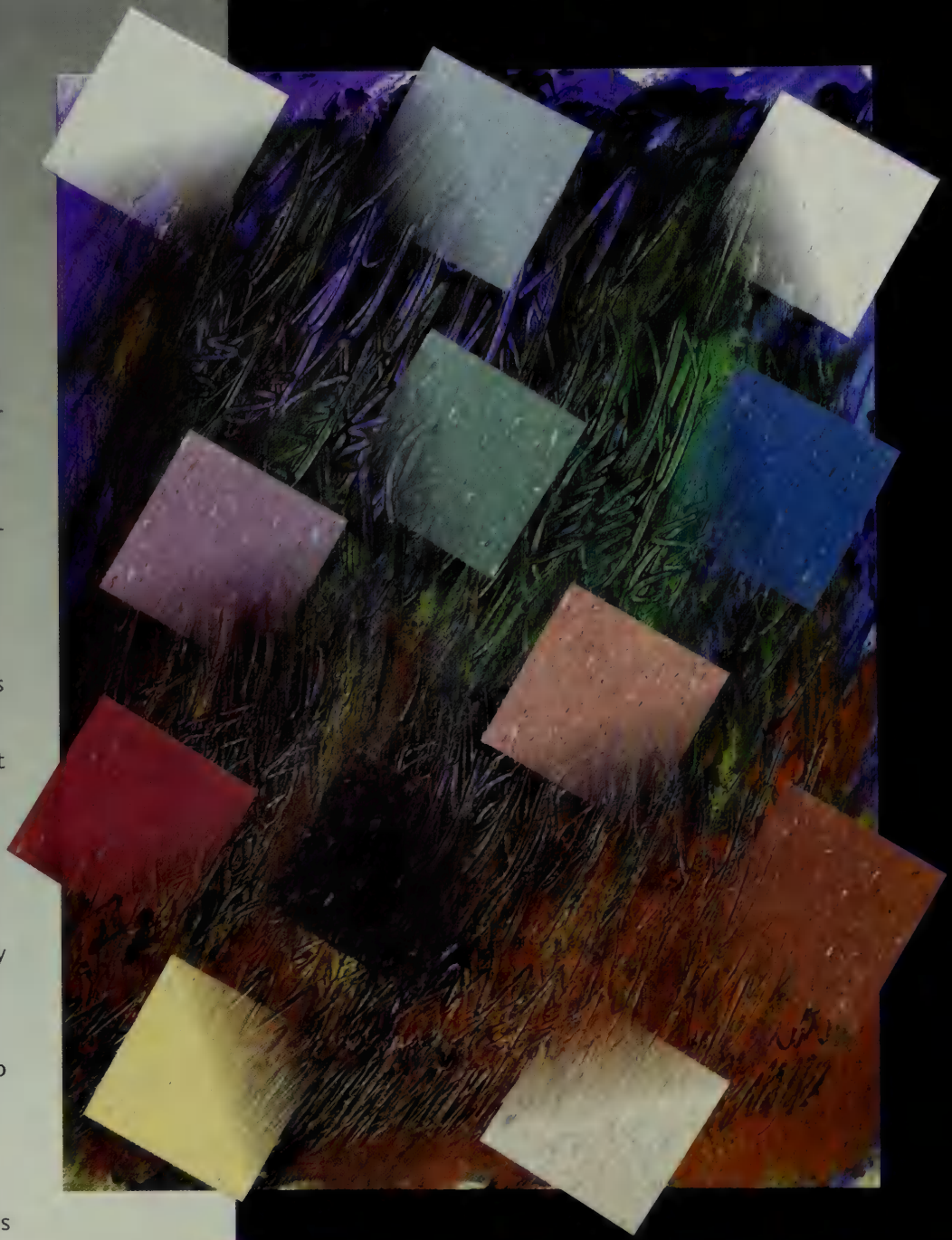
Looking ahead, Colin Knowles, managing director of CMR International, a Melbourne-based management consultant firm, believes the Asian currency crisis will have a significant impact on speculative development but not on infrastructure. He told the *Australian Financial Review:* "In particular there is still massive demand for the construction of roads, buildings, and sewage systems. We've got a high degree of confidence about the amount of work that will come out of Southeast Asia in the future."

Some observers, like Zack McKown, of Tsao & McKown, believe that Southeast Asia's predicament will help foster more responsible development that will respond not only to market forces but also to the needs of the people who live in these cities.

Federal Reserve chairman Alan Greenspan has expressed a similar sentiment—that the current crisis might initiate meaningful economic reform. If that happens, it may well pave the way for more sustainable growth in the future. ■

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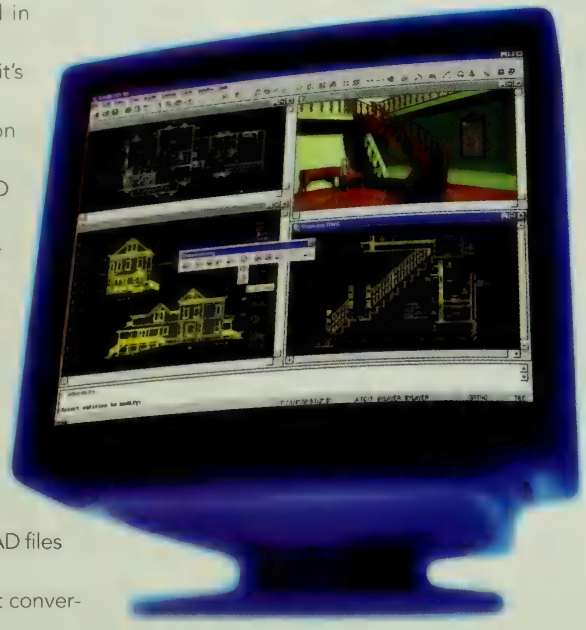
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Project Outline

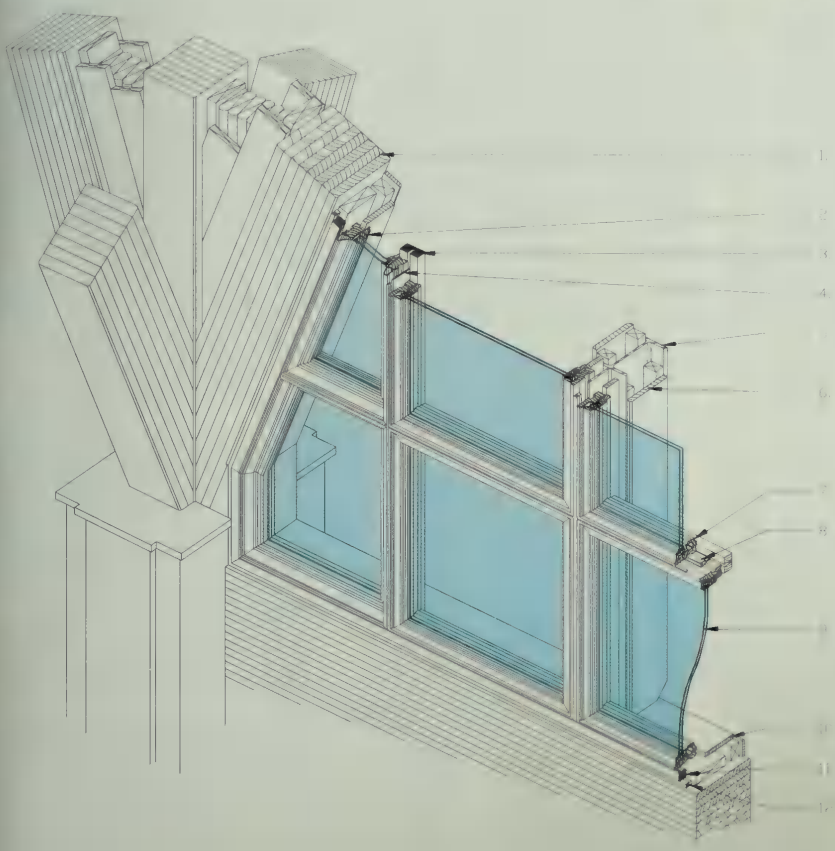
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Calendar

Lighting Design by Alvar Aalto
New York City
Through April 22
"Play of Light" includes lamps and lighting fixtures designed by architect Alvar Aalto for major building commissions in Finland from the 1930s through the 1950s. Pratt Manhattan Gallery. 718/636-3471.

Archigram, 1961–1971
New York City
Through April 25
The conceptual work of the celebrated British architectural collaborative is on view. Storefront for Art and Architecture. 212/431-5795.

Rethinking the Modern
New York City
Through April 28
Three design proposals for the expansion and renovation of the Museum of Modern Art, New York, by Yoshio Taniguchi (who won the competition), Bernard Tschumi, and Herzog and de Meuron. Museum of Modern Art. 212/708-9400.

Photographs by Ezra Stoller
Washington, D.C.
Through April 30
Black-and-white images of classic modern buildings by the well-known architectural photographer. AIA Library and Archives. 202/626-7499.

Shiro Kuramata
New York City
Through May 2
Furniture, objects, and photographs of interior designs by the late Japanese designer. This touring exhibition is the first major retrospective of Kuramata's work. Grey Art Gallery, New York University. 212/998-6780.

Japan 2000: Architecture for the Japanese Public
Chicago
Through May 3
Drawings, models, and photographs of museums, police stations, dams, bridges, health-care facilities, and stadiums by well-known and emerging Japanese architects. Co-organized by the Art Institute of Chicago and the Japan Foundation. Art Institute of Chicago. 312/443-3600.

Arquitectonica: The Times Square Project
New York City
Through May 10
The first solo exhibition in New York of work by the Miami-based firm focuses on the architects' design of a mixed-use complex combining a hotel with entertainment and retail components, to be built at 42nd Street and Eighth Avenue. Cooper-Hewitt Museum. 212/849-8300.

Civics Lessons: Recent New York Public Architecture
Washington, D.C.
Through May 11
Projects in New York initiated by public agencies working with architects from 1985 to 1995. Organized by AIA/New York and the New York Foundation for Architecture, the show emphasizes the link between public investment in architecture and the economic, social, and aesthetic quality of the city. National Building Museum. 202/272-2448.

Alvar Aalto: Between Humanism and Materialism
New York City
Through May 19
Marking the 100th anniversary of Aalto's birth, this large-scale retrospective is the first in the United States to present original drawings and models of work by the renowned Finnish architect, designer, and town planner. Included are video walk-throughs of several of his most important buildings. Museum of Modern Art. 212/708-9400.

Position/Paradox
New York City
Through May 19
An exhibition of work by the six winners of the Architectural League's annual competition for young architects and designers, accompanied by a lecture series. Urban Center. 212/753-1722.

Kisho Kurokawa Retrospective
London
Through June 13
"From the Age of the Machine to the Age of Life," a major retrospective of the work of Japanese architect Kisho Kurokawa, from his early projects with the Metabolist Group through his current addition to the Van Gogh Museum in Amsterdam. RIBA Architecture Centre. 011/01-1-580-5533.

Finnish Modern Design: Utopian Ideals and Everyday Realities
New York City
Through June 28
Featured in the exhibition are glass, ceramics, furniture, textiles, metalwork, and industrial design. Organized by the Bard Graduate Center for Studies in Decorative Arts and the Museum of Art and Design in Helsinki. Bard Graduate Center. 212/501-3000.

Titanium!
New York City
Through June 30
An exhibition demonstrating the range and diversity of titanium, including its recent architectural applications. Material ConneXion Gallery. 212/445-8950.

Architecture in Perspective
Washington, D.C.
Through July 5
A juried exhibition, organized by the American Society of Architectural Perspectivists, featuring 55 renderings, including the six Hugh Ferriss Memorial Prize winners. The Octagon. 202/879-7764.

The Making of New South Asia
Pittsburgh
Through July 19
The work of four South Asian architects—Charles Correa, Achyut Kanvinde, Balkrishna Doshi, and Muzharul Islam—is included in this traveling exhibition. Heinz Architectural Center, Carnegie Museum of Art. 412/622-3131.

Landmarks of New York
New York City
Through August 23
An exhibition of historical photographs celebrating New York's centennial, accompanied by a symposium, walking tours, and panel discussions. New-York Historical Society. 212/861-4641.

Art and Architecture Symposium
Marfa, Texas
April 25–26
A symposium on the integration of art and architecture, with participants Robert Irwin, Frank Gehry, Claes Oldenburg, Jacques Herzog and Pierre de Meuron, James Ackerman, and others. Chinati Foundation. 915/729-4362.

Tax Incentives for Developing Historic Properties
San Francisco
April 27–28
A conference on using historic rehabilitation tax credits more effectively, featuring presentations by developers, financiers, tax specialists, and representatives from the National Park Service. Fairmont Hotel. For information, call the National Park Service, 202/343-1185.

Buildings NY
New York City
April 28–29
Includes exhibits by more than 500 suppliers of new products and services for renovating New York's aging buildings. Jacob Javits Center. 203/840-5384.

Federal Contracting for A/E Services
Washington, D.C.
April 29–30
A practical conference for architects, engineers, and government agencies focusing on processes and regulations relating to federal procurement of architecture and engineering services. AIA members will

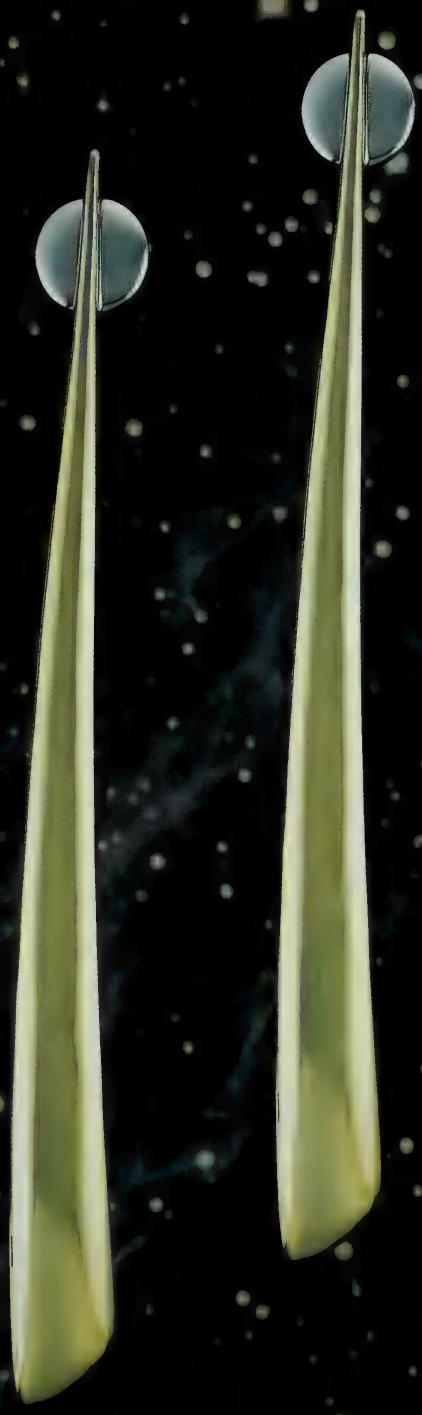
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(continued from page 54)

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Congress for the New Urbanism
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April 30–May 3
"Cities in Context" will explore reshaping existing cities through aggressive infill strategies and integrating environmental preservation with New Urbanist developments. Speakers include architects, developers, planners, and representatives of local and federal governments. Call Congress for the New Urbanism at 415/495-2255 or visit www.cnu.org.

1998 AIA National Convention and Expo
San Francisco
May 14–17
Twelve thousand industry professionals are expected to attend this year's convention at the Moscone Convention Center. For information about exhibiting, call 617/859-4483. For other information, call the AIA at 202/626-7395 or check the convention Web site at www.aia98.org.

Competitions

Development of the Al-Riyadh District
Submission deadline: April 22
Al-Dar Real Estate Investments has announced an international architecture and urban design competition, with professional and student categories, to develop residential accommodations for Muslim pilgrims in the Al-Riyadh District, Makkah, Saudi Arabia. The design for the 3,500-square-meter site should be sympathetic to natural and environmental factors, fulfill the requirements of the pilgrims, and recall the local architectural and urban fabric. First prize for professionals is $50,000; for students $4,000. Contact Salihiyya Center, Office 702, King Abdul Aziz Street, P.O. Box 17871, Jeddah 21494, Saudi Arabia; call 011/966/2-644-4690; or E-mail aldar@mail.gcc.com.bh.

New Public Space Competition
Registration deadline: May 1; submission deadline: June 1
A design competition for a new public square on the Buffalo, New York, waterfront. For information, call Judy Camp, AIA Buffalo/Western New York, 716/852-1900, or E-mail jcamp@buffniag.org.

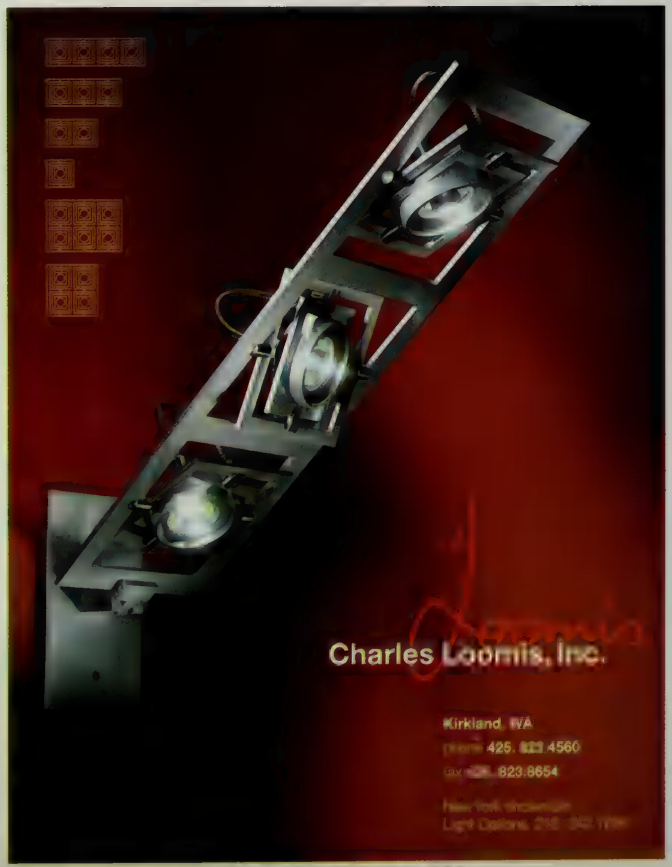
San Francisco Urban Design Competition
Submission deadline: May 18
A competition to develop an urban design vision for the revitalization of 24th Street, a major cultural, economic, and social artery in the Mission District and the city. The goals are to create a healthy, vibrant Latino corridor that serves the local community, attracts citywide and tourist markets, and draws Latin American investments, products, and services. Long-term goals include planning the creation of a *zocalo* and other public spaces. Write Brava, 2180 Bryant Street, San Francisco, Calif. 94110; call 415/641-7657; or fax 415/641-7684.

Precast Concrete Design Awards
Submission deadline: May 22
The Precast/Prestressed Concrete Institute offers awards for structures substantially constructed with precast concrete. Projects must have been completed in the last three years, or be substantially complete now, and must be located in North America. Open to registered architects, engineers, and government agencies. Write PCI, 175 W. Jackson Boulevard, Chicago, Ill. 60604; call 312/786-0300; or fax 312/786-0353.

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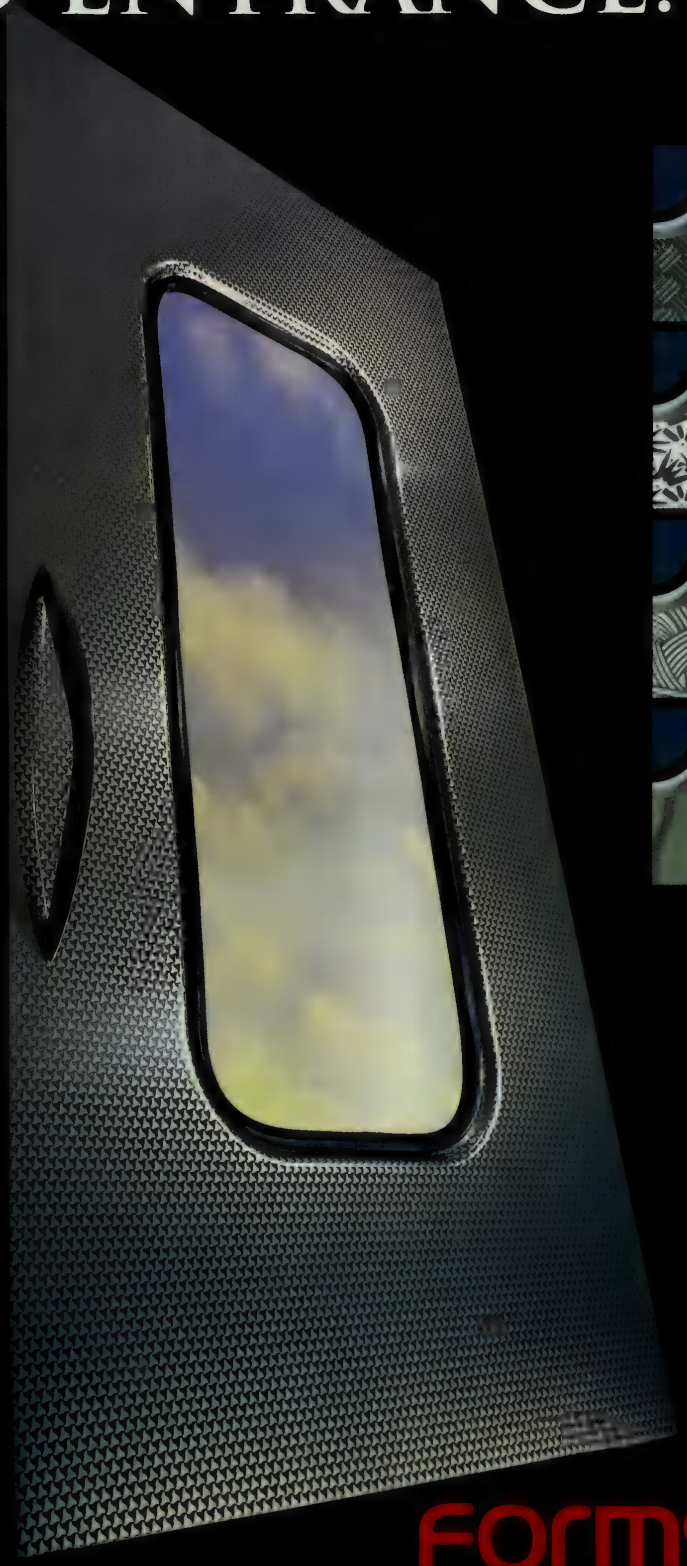
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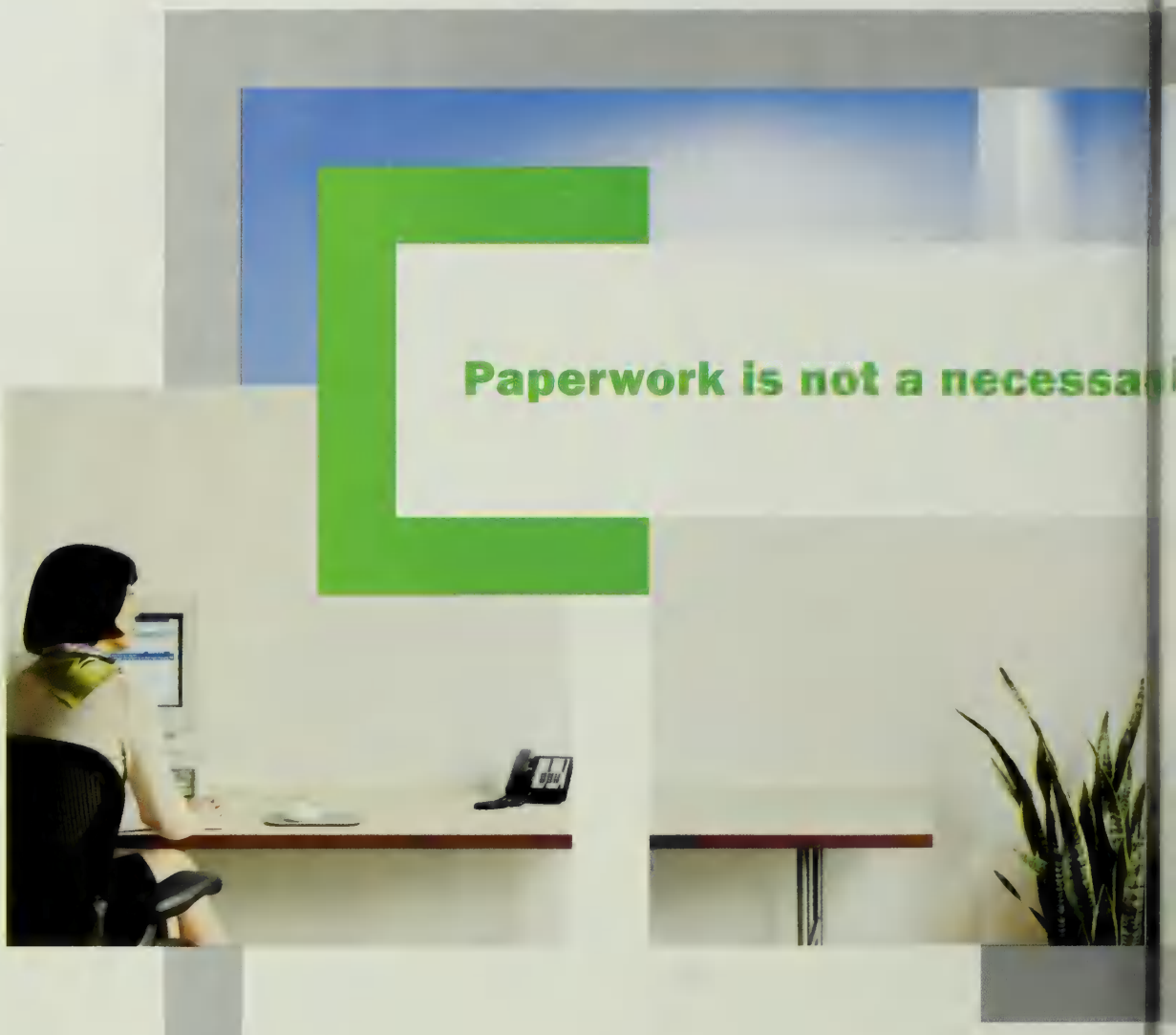
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LISTENING TO: Interior Designers

WHAT DO THEY THINK OF ARCHITECTS?

Text by Wendy Moonan **Illustration by Lebbeus Woods**

On June 4, 1997, RECORD's editor in chief, Robert Ivy, FAIA, convened a panel of prominent interior designers at McGraw-Hill's headquarters in New York City to discuss their working relationship with architects. The seven participating panelists included four who specialize in corporate interiors: Margo Grant Walsh, a director and vice chairman of the New York office of Gensler, an international architecture and interior design firm with 1,200 employees; Susan Orsini, ASID, founder of Orsini Design Associates, with a staff of 20 in offices in Los Angeles and New York; Nestor Santa-Cruz, Associate IIDA, director of interior design for Skidmore, Owings & Merrill's Washington, D.C., office; and Michael Gabellini, AIA, a New York City–based architect whose 25-person, multidisciplinary firm concentrates on well-known fashion and retail clients. Three other interior designers, whose practices are primarily geared toward residential work, were also on the panel: Peter F. Carlson, who, after eight years on the Manhattan design scene followed by four years of practice in Los Angeles, recently opened an office with four employees in Lyme, Connecticut; and New Yorkers David Anthony Easton and John Saladino, ASID, both heads of highly successful eponymous interior design firms with impressive client rosters and several registered architects on staff.

Although architects and interior designers routinely collaborate on both large and small projects, the designers assembled defined some very real tensions in their working relationship. The panel members' remarks on the fundamental differences between architects and interior designers tended to be provocative, sometimes in direct conflict with how architects see things. Nevertheless, RECORD has presented their opinions and commentary as the interior designers stated them, strong feelings and controversial pronouncements intact. In this way, the entire design community will be able to hear their colleagues' voices. One theme that recurs throughout the panel discussion requires clarification: Despite the tenor of the remarks, architects are integrally involved in interior design work at all scales, and, in fact, the majority of interior design work in commercial settings is performed by architects. The results of the discussion, with some additional interviewing and reporting, follow.

Interior designers, in general, seem to view their collaborations with architects as uneasy, characterized by the architects' lack of respect for their intellect, their experience, and their ability to contribute to a project. The interior designers in this panel attributed these strained interactions to different ways of thinking about design, a turf-war mentality, and jealousy (mostly about fees and income levels) on the part of architects.

The consensus among the interior designers on the panel was that architects think differently and work differently than they do. "Architects design buildings from the outside; the inside is fallout," said John Saladino, who has three AIA members on his staff. "The inside is often a disaster because architects don't change scale. They are above caring about the necessities of life." Saladino has designed several multimillion-dollar houses for clients from the ground up. "I wear two hats," he said. "In my firm, we do architecture and interior design. You have to be two-headed. You go from siting the house to conceptualizing the exterior. Then you do the interior. You go from the general to the particular and back again. When you think about the interior, you may change the outside. You may change the windows, for example. Then you may revise the inside. You keep going back and forth."

"Architects are more abstract; for us, design is about the pursuit of beauty," said Michael Gabellini. When asked his opinion, Charles Gwathmey, FAIA, of Gwathmey Siegel & Associates in New York City, an architect who creates the furniture and interiors of many houses he designs, agreed with Gabellini to a degree: "The interior designer is image driven as opposed to content driven," he said. "If you believe in editing and the essence of things, you tend to be reductive rather than additive. [Interior] designers are additive. There's an ideal that says you see the space, the form, and the object simultaneously, and they have to support each other as a whole. I don't make a separation. It's holistic."

THE GROUP'S REMARKS ON THE DIFFERENCES BETWEEN ARCHITECTS AND INTERIOR DESIGNERS TENDED TO BE PROVOCATIVE—OFTEN IN DIRECT CONFLICT WITH HOW ARCHITECTS SEE THINGS.

Wendy Moonan is an editor at large at House & Garden *and a frequent contributor to ARCHITECTURAL RECORD.*



Clockwise from top: Michael Gabellini, John Saladino, Margo Grant Walsh, Susan Orsini, David Anthony Easton, Peter F. Carlson, Robert Ivy, Nestor Santa-Cruz.

"Architects are trained to perceive their designs as sculpture," offered Susan Orsini. "Interiors people have been trained to perceive spaces from the inside out. That's a very critical difference. 'How will the rooms be used, how can a conversation be held in this space?' We always start with the furniture plan and develop the lighting, the power, the infrastructure to support that plan. And, invariably, we're presented with the architectural plan for power and lighting that has absolutely no relationship to the way any space is going to be used." Orsini, who has worked with the CEOs of Trust Company of the West, GTE, Disney, Goldman Sachs, and Forstmann Little & Company, said her goal is "one hundred percent client satisfaction. The form is secondary. It's almost as if you designed the room without walls. It goes to the proportion, to the number of entrances and exits and encumbrances that hinder the space, whether there are windows or doors or any kind of penetration. That's the basic difference of approaching the room from the inside or the outside."

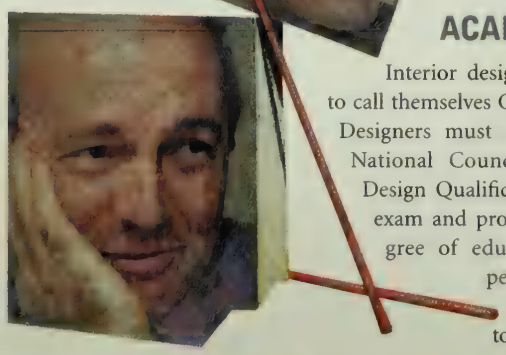
"Inherent in the architect's training and practice is the defining of space through the three-dimensional media of floors, walls, ceiling, light, and material," says David Ling [former AIA], a young New York City architect who trained with I. M. Pei and Richard Meier and currently designs commercial and residential interiors. "Inherent in the interior designer's training and practice are furnishings, surface treatment, and objects. Decorating is an assemblage of objects accrued outside the space."



Learning curve

Interior designers are trained differently. Unlike architects, they are not required to earn a design degree, apprentice with a firm, or pass a state licensing exam in order to hang out a shingle. Interior designers must follow individual state codes on issues like accessibility. Because they are not responsible for health and safety issues, they do not need liability insurance.

"DESIGNERS ARE PERCEIVED AS NOT HAVING INTELLECTUAL OR ACADEMIC BACKGROUNDS." —Peter F. Carlson



Interior designers who want to call themselves Certified Interior Designers must pass a two-day National Council for Interior Design Qualification (NCIDQ) exam and prove a certain degree of education and experience. However, few clients seem to care about these credentials. In New York State, where thousands of people call themselves interior designers or decorators, only 105 are actually state-certified Interior Designers, according to Lorraine O'Keefe, Education Program Assistant for the New York State Education Department's Board for Interior Design.

"THE QUALITY THAT WE ALL GREW UP WITH, THAT WE USED TO BUILD WITH...IS OVER." —David Anthony Easton

Comparing the backgrounds of designers is revealing. Of the members of RECORD's panel, Saladino studied painting in graduate school at Yale and Peter Carlson studied theater, English, and art history at Connecticut College. The other participants attended design schools, where they studied color theory, materials, the history of architecture and design, and learned to draw to scale and do renderings, but only two became members of the American Society of Interior Designers (ASID), because, they say, clients hire them for their style not for their professional designations—which they believe have no real meaning in terms of job performance.

Established in 1975, ASID is a national professional organization of interior designers, with 20,000 practitioner-members (there are student- and industry-affiliate memberships as well). Of the 20,000 practitioners, 4,000 are exclusively residential designers, 6,400 are involved only in contract design, and 9,600 do both. Professional (as opposed to affiliate) members of ASID must have a combination of design education from an accredited institution and/or full-time work experience, have passed the two-day NCIDQ exam, and pay a $90 initiation fee as well as $355 in annual dues.

The AIA members participating in the panel, however, felt that their licensing was important. "It has a very strong effect on the way architects perform their craft," said Gabellini, "because they are bound by a different set of expectations and rules. They have to be very specifically involved with many different technical things. And it makes a difference in terms of ethics and responsibility."

"THE BIGGEST COST IN BUSINESS IS NOT THE REAL COST. IT'S THE COST OF CHANGE." —Margo Grant Walsh

The interiors professionals felt strongly that architects don't respect them. "Architects think of decorators as 'purchasers,'" stated Saladino. He holds the media partly responsible. "Designers are characterized as *Cage aux Folles* types or women between marriages." "We aren't perceived to be as professional as architects," said Carlson. "Perhaps it's because we deal with the clients on all the bread-and-butter issues. We are perceived as people who don't have the academic or intellectual backgrounds architects have."

On the panel, the interior designers said they find architects to be arrogant, overly intellectual, ideological, and unworldly. "Why do architects think they can do interiors?" asked Orsini, who is currently designing interiors for Disney's first two cruise ships. "You wouldn't hire a heart surgeon to do plastic surgery." "I have sympathy for architects; they are as well educated as brain surgeons even if they aren't as well paid," said Saladino. "But architects' egos are often taller than the tallest skyscraper, because they have been raised to believe that they are the alpha and omega in school. Architects are taught to work on a scale I call megalomaniacal; designers do small scale. Architecture schools have taught architects to believe they are above the clients. The architect abstracts the client. Interior designers connect to the client on a human level."

Competitive edges

Architects' lack of collaboration on projects was cited by several interior designers on the panel as a major problem. Easton, who earned a bachelor of fine arts in architecture at Brooklyn's Pratt Institute but is not a registered architect, recalls the fights between the architects and designers at the venerable New York City decorating firm Parish-Hadley, where he worked until 1978. "Architecture may be my first love, but I came into conflict several times with architects, who put furniture at the wrong side of the room; the two offices didn't deal very well together." Ultimately, a group of several Parish-Hadley architects left to form Ferguson, Murray & Shamamian Architects, and Easton started his own office, which currently has 45 employees, including 16 architects. When he can, he builds houses from the ground up. (His clients include some of the wealthiest people in America: John Werner Kluge, the William Crockers, the Thomas Dittmers, and Elizabeth Johnson, among others.)

"Competition presides over collaboration," said Gabellini. On the panel, most of the interiors experts thought architects were often weak on floor plans. "Architecture and interior design are two trades," said Orsini. "Optimally, an architect would employ a decorator as a consultant, so they could work together." "I want to work with the architect from Day One, the very beginning of the project," said Margo Grant Walsh, who worked at SOM until 1973. She recalled the system there in the past. "Once the building was designed, accepted, and in production, the architect went on to something else. Then the process started for the interiors." Today, Walsh's work style is more collaborative.

Price fix

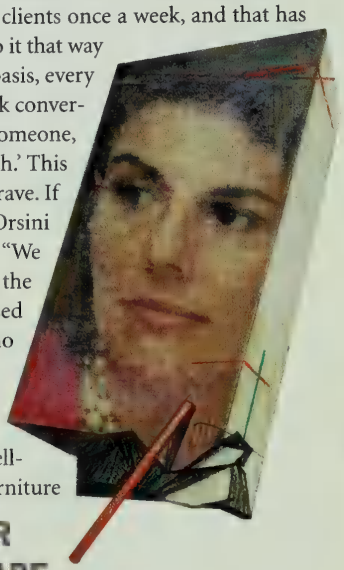
Decorators and interior designers often make a great deal more money than architects. The irony is that the client doesn't chafe at paying an interior designer a larger fee than an architect on the same project. As Barry Goralnick, AIA, of Goralnick Buchanan, a small New York City architecture and interior design firm, explains, "People resist paying me more than 20 percent in architecture fees, but they don't blink at the 30 percent we charge for decorating."

The AIA's posture is that all architectural compensation is negotiable, according to AIA Vice President for Public Affairs Charles E. Hamlin, but the reality is that most architects charge between 15 and 22 percent of a project's construction costs. Small residential interior design firms tend to charge a percentage on all purchases, from art and antiques to upholstery and textiles. The markup for upholstery is about 33 percent (50 percent when the job is custom), 50 percent on fabrics, 33 percent on ready-made furniture, and 15 percent on antiques. In this fashion, a decorator can make a good living.

"ARCHITECTS ARE CULTURALLY DEPRIVED. THEY ARE UNDERPAID.... THEY DON'T TRAVEL." ***—John Saladino***



At larger and specialized contract (commercial) firms, interior designers bill differently. Of the designers on the panel, four bill by the hour. "A long time ago I abandoned working on a percentage basis," said Saladino. "On each project, I start with a design fee, which ranges from $25,000 to $100,000, depending on whether the client wants a site plan, a real model, a rendering, floor plans, and a full set of boards showing all materials, furniture, fabrics, and the like. I do it this way because it gives people a dignified avenue of retreat. They have paid me for my services. If they are scared, they can hire a local architect to copy my scheme and not be at my mercy." He continued: "Once I get the go-ahead on the project, however, we bill just like a law firm, by the hour. It's a pyramid, with me at the top. We bill clients once a week, and that has made me a lot of money. If you don't do it that way and you are working on a percentage basis, every Monday morning you get a quarterback conversation with the client: 'I was talking to someone, and maybe we should do such and such.' This could go on until they put you in the grave. If you work by the hour, it's different." Orsini structures her billing in a similar way: "We charge a design fee and then bill by the hour. All of the net costs are passed directly through to the client, with no markup. It's the cleanest way."



At Gensler, Grant said, the firm charges only a design fee, usually with a guaranteed maximum and well-defined scope. Gensler does not buy furniture and textiles for clients. At SOM, Nestor Santa-Cruz explained, "we estimate how much time the job will take me, the project managers, and the designers on the job, and we charge either a flat fee or a fee based on the square footage of the job. We don't construct and build—we recommend contractors—and we don't procure things. We only specify what we think is right, and then the client hires a dealer to order it. The dealer tends to charge about 15 percent above net cost. The client is billed directly."

"INTERIOR DESIGNERS BECOME CLOSER TO CLIENTS, BECAUSE WE ARE GIVING THEM THE ULTIMATE PLEASURE." ***—Susan Orsini***

Bonding rituals

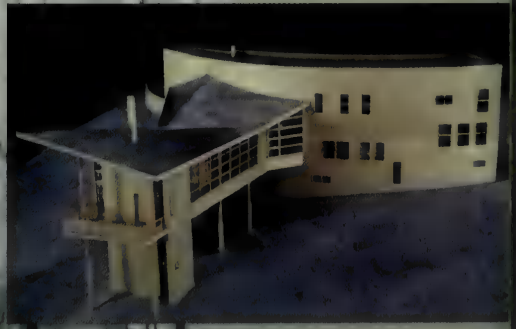
In the opinion of the RECORD panelists, interior designers' relationships with clients tend to be longer and stronger than architects'. Designers shop with their clients, share meals, even travel abroad together to attend antiques shows in London and Paris. Architect Goralnick rejects the old cliché that has the husband working with the architect and the wife with the decorator. Actually, muses Goralnick, both the husband and the wife work with the interior designer, especially on lavish buying trips to Europe. "Interior designers ultimately become closer to clients, because we are the ones who are giving them the ultimate pleasure," Orsini said. "Very few people get a great deal of pleasure from windows and doors, but most of them take pleasure in the sofa they sit on, in the type of down in the cushion, in a piece of silver, a painting. We're dealing with the objects of pleasure, the things clients will touch and enjoy. I think that that also starts a different kind of intimacy with the client, because we know where the underwear is stored, the linens, and everything about their lives. Sometimes we put away everything they own."

"Designers provide instant gratification; it's called shopping," says Steven Harris, a New York City architect who *(continued on page 176)*

Making a Spec House Special

ARCHITECTS GISUE AND MOJGAN HARIRI TEAMED UP WITH A TRADITIONAL DEVELOPER IN VIRGINIA TO BUILD A SPEC HOUSE THAT OFFERS A MODERN ALTERNATIVE TO THE NORM.





Riverbend House was designed to challenge the way developers look at spec house projects and suburban homeowners live the American dream.

by Elana Frankel

Gisue and Mojgan Hariri are known for their high-style architecture, but when they decided to team up with developer Manou Faily, who has been building traditional speculative houses in northern Virginia since 1979, they had to rely on research and instinct. In a time when young, well-educated entrepreneurs are migrating to the area's flourishing computer, telecommunications, and wireless industries, there are plenty of millionaires who are able to afford to buy new homes in this pricy Washington, D.C., suburb. "We looked around and found that people in the area were ready for something different," says Gisue Hariri. "They wanted unique homes and had more sophisticated design tastes." But new money doesn't always translate into modern taste, and many home buyers seem unsure of how far they are willing to go. According to the architects and the developer, the trick has been to encourage these buyers to think outside the traditional development box—and to buy modern.

The result of their collaboration, Riverbend House, is a modern architectural statement that sits quietly but proudly on 2½ acres on the edge of a cul-de-sac in Great Falls, Virginia, among traditional developments and a handful of California contemporaries. From its infancy, much media attention has been turned on the house's design, as well as its potential impact on the speculative housing industry. Riverbend ignores all of the attention and simply blends into the undulating and wooded landscape.

Great Falls, touted by local real estate agent Penny Yerks of Weichert Realty as "good horse country," has a strong Colonial history. Riverbend House is surrounded by the comfortable 3,000-square-foot cookie-cutter designs familiar to many affluent suburbs—either formal residences with opulent front elevations, enormous porticoes, and vinyl Corinthian columns, or overscaled bungalows with false dormer windows, shutters, and balustrades. Expected details have always driven the area's brisk residential market.

But four years ago, Faily, with the backing of investors; his building company K.B.F., Inc.; and its general contracting subsidiary Manco, Inc., decided the time was right to test a modern speculative house project in the marketplace with the Hariri sisters as its designers. Although Faily admits it was a risky choice because the architects had little experience creating development houses in America (though they were working on developments in Holland), he had seen their work in a builder's magazine and was impressed. The group immediately purchased an inexpensive plot of land, which had been deemed unbuildable by previous developers because of its rolling landscape, and went to work.

Faily, who trusted the Hariris' knowledge of modern design, gave them free rein to create the program and floor plans, although he did contribute ideas about which aspects of traditional homes sell in the area. The final result, however, "is substantially different than the typical development," he says. "A lot of what they did is a no-no in traditional housing."

These "no-nos" start at the house's entry. Ignoring the traditional suburban ideal of a well-manicured front lawn and a white picket



The front of the house mimics the curved wall and driveway while maintaining its simplicity. The architects placed their more opulent effects elsewhere.



Though surrounded by more traditional development lots, Riverbend House holds its own, creating a modern statement that contrasts with many of the area's houses.



After 19 years of building hundreds of traditional speculative homes, Manou Faily, the developer of Riverbend House, decided to experiment with a spec house project in Great Falls, Virginia. Why? He had overheard out-of-towners talking about modern design being popular in California, parts of New York, and other northern states. Faily says that although there are only a few modern houses in the Potomac area and, overall, people have very traditional tastes, he believes it is just a matter of time before a new aesthetic will start to emerge and "catch on."

"It isn't California," Faily muses, "but we took a chance and implemented the new design…to see what would happen." Beauty is in the eye of the beholder, and Faily admits that it will take a certain type of eye to appreciate this house.

But every new venture has its risks, says Faily, and he is confident that the right people will come along and find the appeal in the Riverbend House's unique form. Faily hones in on the form of the house because, he says, "it is unusual for a residential site and implementation was tricky."

As any good developer and contractor knows, curved lines are always more difficult to build than straight lines. But Faily and his team were prepared. "Curved shapes? No problem. However, there was more steel structuring involved than usual and that was difficult for the residential trade to understand. It was outside the normal way that trades do residential work."

The labor-intensive building process was not without its rewards. The strength of the structure resides in the steel column and beam and wood hybrid construction, which created larger spans and helped accommodate the house's open plan and sculpted spatial areas. The result, says architect Gisue Hariri, is that "it is not a simple, square box."

The house is far from the typical development site, and thankfully so, say architects and developer. "We're looking to broaden people's horizons," says Gisue Hariri, "and encourage others to take chances." *E.F.*



The steel and wood hybrid structure created larger spans, allowing for Riverbend House's open plan and sculpted spatial areas.





There are two distinct sections to the house. The Hariris refer to them as "earthbound" and "skybound."



In an unexpected twist, the porch, typically placed at the front of a house, is set up to look out on the backyard.

fence, Hariri and Hariri used flowerboxes and planters to provide a welcoming effect and a wall of green hedges to mark the property line. And though the surrounding houses focus a lot of attention on the front doorway, the architects decided not to concentrate on this detail because, Gisue Hariri says, "the front door is traditionally used only for special occasions." The entry doorway is well marked but simple, elegantly

AS A MODERN ARCHITECTURAL STATEMENT, RIVERBEND HOUSE SITS QUIETLY BUT PROUDLY ON THE EDGE OF A CUL-DE-SAC.

following the lines of the curved stone wall. The windows on the cedar-sided front elevation, though meticulously appointed, look randomly placed, in contrast to the symmetrically balanced windows at the entries to other houses in the neighborhood.

The design concentrates on the house's 5,000-square-foot plan, which is divided into two separate and distinct areas. The first is what the Hariris refer to as "earthbound," a heavy masonry structure that follows the land's contours and includes the house's private parts: four bedrooms; a split-level master suite with walk-in closets, a spa-tub, and separate shower; and a laundry facility, which has been raised from its usual basement status.

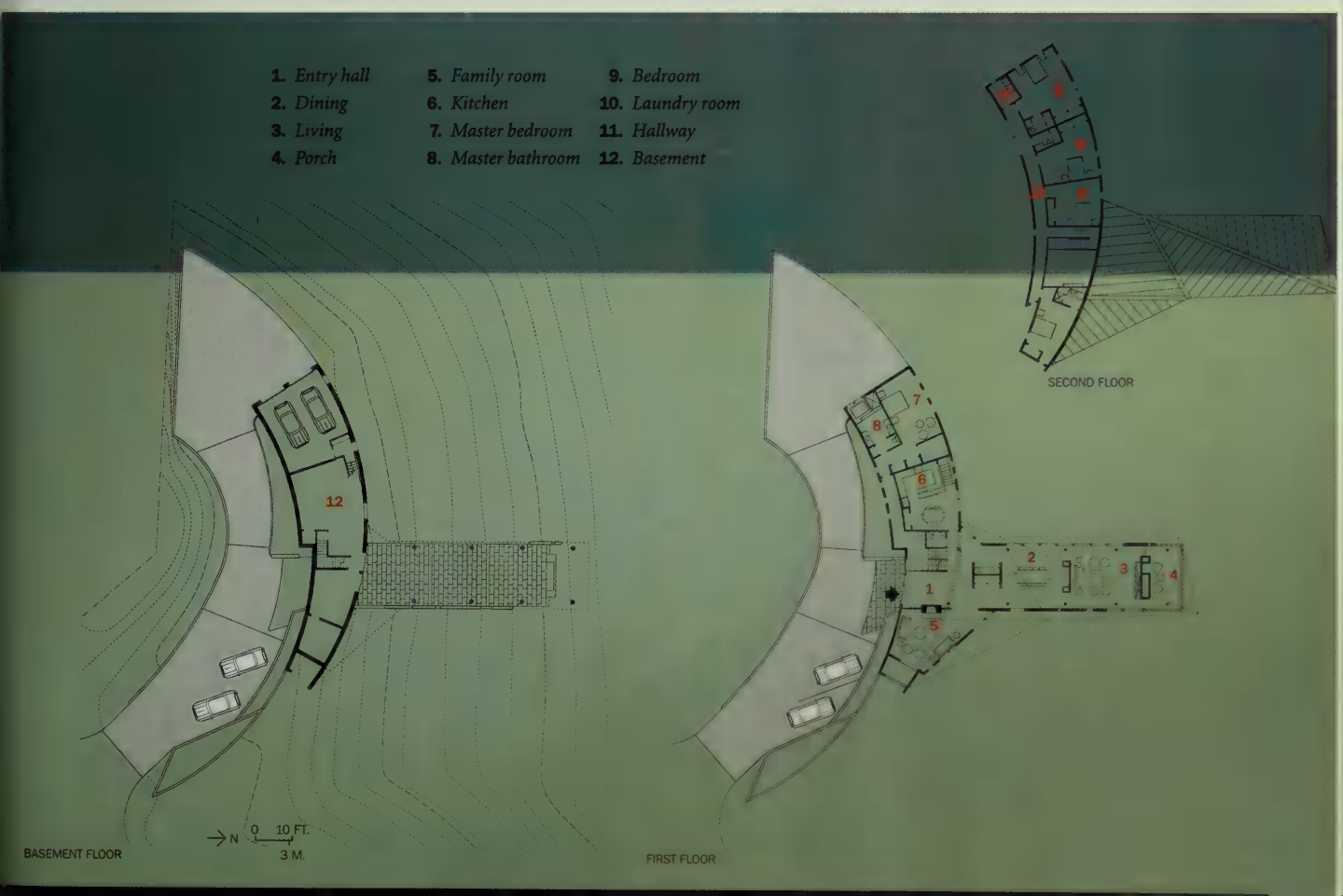
The "skybound" part of the house, a light, airy, treehouselike structure that juts out into the property's backyard, is supported by steel columns with a stucco exterior and largely enclosed by glass curtain wall. "This whole section of the house emphasizes the human desire for weightlessness," says Gisue Hariri. "The folded plane roof and 22-foot ceilings give the illusion of a precisely formed wing about to take flight."

This part of the house contains the more public areas: the family, dining, and living rooms. The dramatic open spaces of the family and living rooms are divided by partial walls constructed from stucco and feature wood-burning fireplaces with 2-inch stone slab raised hearths. These added details give the rooms warmth; the stucco walls in particular provide a tactile and textured accent.

The public spaces offer panoramic vistas of the wooded setting and a small creek. A 6-by-10-foot deck off the family room expands the space and provides outdoor views. A porch, transported from its traditional front location to behind the living room, also brings the interior closer to the landscape.

The stillness of the setting is reflected in the interior's minimalism and austerity. Doing away with the chaotic trappings of modern life, the architects chose simple details to hold the house together stylistically. European beechwood kitchen cabinets, for example, are used in the butler's pantry, a separate and well-hidden wet bar off the dining room, and the bathrooms.

Although the basement is not finished, the space could accommodate a home office. Extending from the basement's doors is a flagstone



Architects Gisue and Mojgan Hariri pay close attention to details in all of their projects and are sensitive to the material needs of the entire space. Riverbend House is no exception.

Striving for an expressive ideal, the sister architects use various materials to create a comfortable and livable setting for a modern American family. Examples of their carefully thought-out yet simple use of materials include the marble vanity tops in all of the bathrooms and the butler's pantry/wet bar; the granite kitchen countertops; and the clear-grade oak flooring and staircase.

Two main themes run through the treatment of materials in the house. First is the idea of nature in general and the surrounding landscape in particular. The late afternoon light on the interior plaster stucco walls creates geometric patterns and shadows that eliminate the need for carpeting or a lot of "busy" furniture. Like the house's surroundings, the interior design is clean, simple, uncluttered, and streamlined.

The second theme, and the more noticeable Hariri trademark, is the adaptive use of industrial materials in a residential setting. This utilitarian treatment stands out particularly in the context of this wooded and suburban setting.



The steel-wire stair railings (below left) are representative of the architects' experimentation with such new ideas, as is the tightly built steel column and beam construction that supports the structure. Brushed stainless-steel restaurant-style surfaces, like those in the kitchen, reflect the architects' desire to play with notions of urban materials.

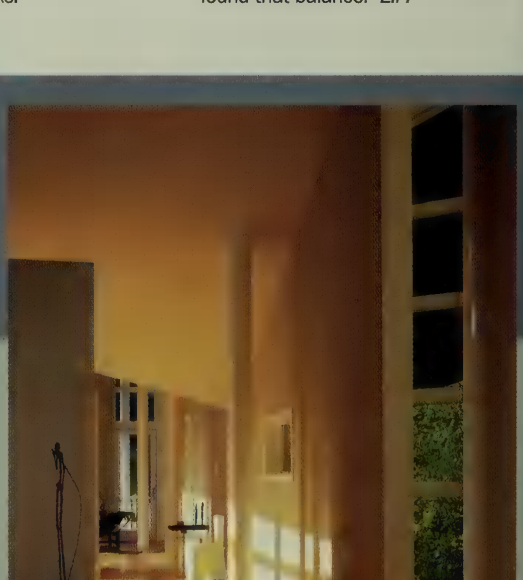
The custom-designed metal wall sconces (right) and all of the kitchen lighting were designed by the architects and produced by George Kovacs as part of the company's Hariri and Hariri Stasis series. The urbane originality and industrial feel of the lighting, especially when viewed in relation to the house's setting, is one of the aspects most admired by potential homebuyers touring Riverbend House, according to real estate agent Penny Yerks.



Throughout their design work, the Hariris strive to create a balance between opposites—natural versus man-made, rural versus industrial—in their use of materials. Many visitors to Riverbend House would agree that here the architects have found that balance. *E.F.*



Light plays an important role in the daily life of the house, creating changing patterns and shadows.



The house's cathedral ceilings are supported by steel beams, which give the house a more industrial look.

terraced patio—a large, shaded area with a built-in bench at the far end, outdoor lighting, and a finished plaster ceiling. Originally the patio, measuring 58 by 20 feet, was designed to complement a pool; once the pool was eliminated from the plan, however, the patio became an "outdoor room," integrated with the landscape to create a private recreation area.

By challenging conventional suburban wisdom, the Hariris have created an alternative type of house that reflects not only the needs of today's family but also changing aesthetics. The architects and developer hope that, like a haute couture dress, the ideas behind this one-of-a-kind house will achieve greater mass appeal. In an area where developers rely on houses that are buildable and sellable, Riverbend House is a visionary architectural test that merges theoretical principles of architecture with speculative house development.

But the people behind the creation of Riverbend House each have their own goals. On the one hand are the typical concerns of any developer: the house's resale value, the need for it to "fit in" with its peers, its relationship to the oft-cited vision of the American dream house. Developers also measure a house's success by its monetary worth. Faily recently sold two traditional homes in the Great Falls area for $1.33 million and $1.47 million, and sold them fairly quickly. Riverbend House is listed at $1.1 million and has remained unsold for close to a year. The Hariris' goals for the house were to experiment with design, challenge perceptions of modern family living, and create a new speculative housing option. The architects' measure of success is the simple fact that the house got built to their specifications. ■

Architect: *Hariri and Hariri—Gisue Hariri, Mojgan Hariri, partners-in-charge; Gisue Hariri, Mojgan Hariri, Graydon Yearick, design team; Ray Koh, Zoe Lin, Graydon Yearick, model makers*
Associate Architect: *Bahram Youssefi*
Engineers: *Robert Silman Associates, PC (structural); Professional Design Group (land survey)*
Mechanical Consultant: *Marcy Ramos*
Builder/General Contractor: *K.B.F., Inc./Manco, Inc.*

Sources
Joists: *Trus Joist*
Steel work: *Structural Steel Fabricators*
Awning and double-hung windows, glass curtain wall, feature window combination, insulated and tempered glazing, Frenchwood hinged doors, and sliding Perma-Shield doors: *Andersen*
T&G siding: *Western Red Cedar*
Stucco: *Dryvit*
Membrane roof: *Carlisle Roofing*
Galvalume: *Fabral*
Orbit locksets: *Schlage*
Garage door: *Ceco/Winsor*
Full mortise hinges: *Stanley*
Wire pulls, cabinet hardware, and cabinetwork: *Ikea*
Latex paint/stain: *Benjamin Moore*
Bathroom tile: *American Olean*
Vinyl sheet resilient flooring: *Lonseal*
Le Corbusier chaise longue: *Atelier International*
Marcel Breuer Wassily chair: *Knoll*
Eames wire chairs: *Herman Miller*
Cloud couch and Impala lounge chair: *Modernica*
Hariri and Hariri Ryoanji side table and Hariri and Hariri Statis lighting: *George Kovacs*
Recessed ceiling lights: *Lightolear*
Wall sconce: *Hubble*
Decora lighting controls: *Leviton*
Sink, whirlpool, shower set, and faucets: *Kohler and Elkay*
Retaining wall and planter box: *Keystone Retaining Wall System*



The partial-height stucco wall and fireplace in the living room separate the space from the back deck.



The kitchen has both a bar area, shown here with a stool, and a family eating area big enough for a table of six or eight.


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A HIGHLY PERSONAL TOUR OF TWO RESIDENTIAL SHRINES, WITH RUMINATIONS ON THE CHARACTER OF CELEBRITY.

by Michael Sorkin

On the covers of the official guidebooks, Graceland and the White House look pretty much the same. Tight shots on white porticoes—four classical columns each—evoke the big house, our standard-issue national icon of gracious living. And, of course, I'm writing this piece because we're all invited for a visit. Indeed, more people visit these two houses than any others in the U.S., over a million to the White House annually, three quarters of that number to Graceland. (No numbers are available for drive-bys at O.J.'s Rockingham.)

Which brings me to the first big difference: nobody lives at Graceland. It's different in D.C. According to the White House guidebook, the presidential villa is the "only residence of a head of state open to the public on a regular basis free of charge." Isn't this exactly what we've been fighting Saddam about? Putting global resonances aside, this is an extraordinary piece of information. Indeed, in today's Did-Bill-Kiss-Monica atmosphere, such national visitation rights suggest that we hold our presidents' privacy to a pure celebrity standard: inquiring minds need to know.



The open-door policy relegates the president to shopkeeper status, living above the store, a tourist attraction in his own home. This is a hallmark of the contemporary presidency: we want to get up-close and personal with the man in the White House. Even I receive a Christmas card from the First Family and, having gotten a couple, feel I'm entitled to receive them forever. We expect hospitality from the president—at least a look around the pad—and we can get it just by showing up at the door. Such simultaneous free access to both the press-hyped presidential peccadilloes and to the president's space begs the current questions: what did the president do and where did he do it?

Opposite: Elvis's Graceland is, like the White House, relatively small, but it came with such perks as a jet, armor-plated cars, and ubiquitous retainers.

Above: The Secret Service handle for the current White House occupant is, not surprisingly, Elvis.

This surveillability of the presidency has become increasingly optical and architectural. I lifted a page from a copy of *U.S. News & World Report* during my recent swing to Washington and Memphis to get an axonometric drawing of the president's inner sanctum, otherwise "off limits" (like the upstairs bedrooms) to the public. (Actually, this is a somewhat elastic situation: upstairs is the area of the residence which is open to the public on payment of a fee.) The magazine image maps the Oval Office, study, dining room, bathroom, pantry, patio, and secretarial office. More interesting, the drawing shows the location of several peepholes, which allows the average citizen to calculate precisely the optic surveillability of the space, even those rooms that remain, for us, behind closed doors. Not shown in the image (but alluded to in the text) are a photoelectric sensor system for keeping tabs on the president's movements and a "secret" tunnel joining the office and the family quarters.

It is a map of the invisible, of the few gaze-free zones in the White House, not necessarily the scene of the crime but scenes in which the commission of the hoped-for crimes *might* be undertaken. Elvis was himself no slouch in the peccadilloes department, and, like the White House's, the Graceland tour is structured to both reveal and conceal, to create a forbidden region where forbidden pleasures (the pill popping and the girleen bacchanals) might have taken place. Like the White House, Graceland puts upstairs off-limits out of respect for the privacy of The King. And it is off-limits: the flack who took me around had been in Graceland's employ for 10 years and had never mounted those fateful stairs. It's canny management: the unknown is the most fertile ground for fantasy, and everyone, it seems, who comes to Graceland is interested in the fundamental mysteries of the cult. Half of the country claims to have seen Elvis in the last six months. This makes him strangely visible, which, in turn, makes the preservation of his privacy a thoroughly reasonable idea.

We have come to accept a standard-issue version of celebrity. Ours is the culture that invented attention-deficit disorder and we seem to like our icons as succinct and empty as possible, no nuance please. By such shorthand, Graceland and the White House produce the aura of celebrity very similarly. Both offer the spatialized *(continued on page 192)*

Right: The bodies of Presley, his mother, paternal grandmother, and father are buried in the Mediterranean garden, built by Presley in the 1960s as a quiet refuge. Beyond is the pool and main house.



Right: White House visitors may view the Blue Room, an oval second-floor reception room behind the South Portico. It is shown here prior to 1995 renovations.



THE OPEN-DOOR POLICY RELEGATES THE PRESIDENT TO "LIVING ABOVE THE STORE." WORSE, HE IS A TOURIST ATTRACTION IN HIS OWN HOUSE. THE GRACELAND TOUR IS CONSTRUCTED TO BOTH REVEAL AND CONCEAL, TO CREATE A FORBIDDEN REGION WHERE FORBIDDEN PLEASURES MIGHT HAVE TAKEN PLACE.

Right: The Red Room is one of four White House [redacted] reception rooms open to the public. Empire style furnishings predominate.

Below: Before opening the house to the public in 1982, Graceland's proprietors replaced Elvis's last "red motif" music-room decoration with the look it had in the 1960s and 1970s.



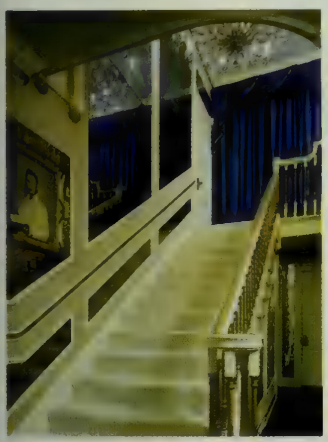




Opposite: The State Dining Room is set with wildflower-decorated Lyndon B. Johnson china. The room [redacted] enlarged to its present size in 1902 by McKim, Mead & White.

This page, clockwise from right: The 1974 Presley TV room. The three sets were inspired by President Johnson, who liked to watch all network-news broadcasts simultaneously. Elvis's dining room is set with Noritake china. The stair leads to the off-limits upper level.







**WHATEVER ONE'S DECORATIVE SENSIBILITIES,
THESE ARE BOTH PLACES DEEPLY INVESTED IN PERIOD.
NEVER MIND THAT ONE IS DONE IN EMPIRE BLEU
AND THE OTHER IN AVOCADO GREEN AND HARVEST GOLD;
THIS IS TASTE THAT IS DEFINITELY NOT OF OUR TIME.**



Opposite: The Blue Room after its 1995 refurbishing has new drapes, wall fabric, upholstery, and carpet. The couch was first acquired in 1817.

Right: Graceland staff calls this den the Jungle Room, explaining that Presley picked out the carved-wood and fake-fur chairs on a whim in the 1970s. Not shown is a fieldstone wall fountain.



IF THE WHITE HOUSE IS A SHRINE TO THE GENTEEL STYLES OF THE EARLY REPUBLIC, GRACELAND IS A MECCA OF HIGH TACK, JUST THE DECOR TO GO WITH SEQUINED JUMPSUITS AND PINK CADILLACS.



Left: Mirrors surround the fireplace in the living room. Perpetually urging those he met to visit, "Elvis is thus regarded as Graceland's original tour guide," according to the official guidebook.



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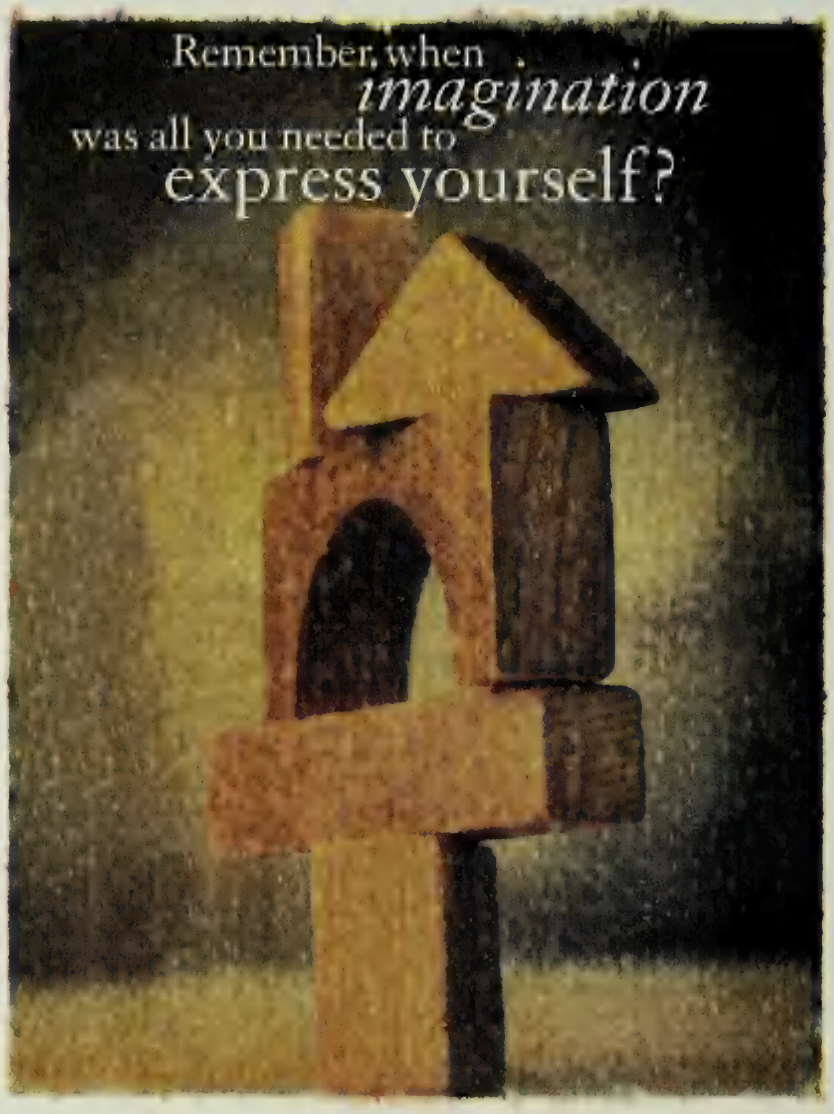


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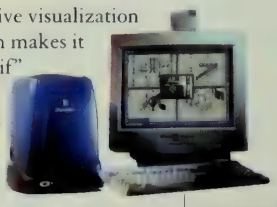
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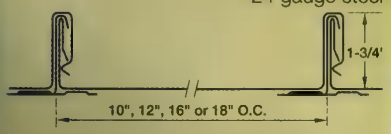
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CIRCLE 39 ON INQUIRY CARD

Record Houses 1998

The great experiment in American architecture" is what Mack Scogin calls the architect-designed house. He should know. His firm, Scogin Elam and Bray, has completed numerous houses over the years that have questioned the norms of domesticity, including his home with Merrill Elam, which they redesigned after a hurricane obliterated 20 years worth of renovations to the couple's Atlanta bungalow (page 130).

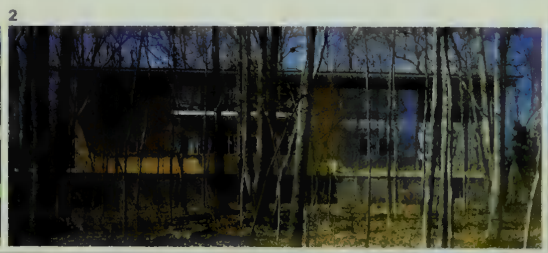
The variables in these great experiments are not always the same. While acts of nature may force an unlucky few to rethink their domestic surroundings, other clients are prompted more gradually. Leslie Gill and Bryce Sanders's clients, for example, were faced with the space constraints of a family with two young children and one work-at-home adult. The challenge was to fit extensive storage requirements into a Brooklyn Heights, New York, carriage house without significant exterior alteration (page 124). Fitting it all in was also a concern for Jim Jennings, although he had a more generous site and budget. Within San Francisco's building constraints, he sought to accommodate his client's museum-quality contemporary art, as well as guest suites for visiting artists, without making the house appear institutional (page 102).

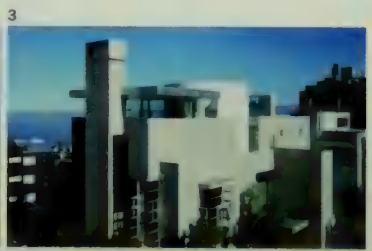
Houses by:
1. Cheng Design
2. Frank Harmon Architect
3. Jim Jennings Architecure
4. Salmela Architect
5. The Office of Peter Rose
6. Leslie Gill and Bryce Sanders
7. Scogin Elam and Bray

Outside city limits, the boundaries are as much implied as imposed. The home and studio that Frank Harmon designed for an artist couple in the woods of Piedmont, North Carolina, is reminiscent of nearby farm buildings (page 98). Cheng Design's Del Mar, California, house was conceived as "a pioneer in an unsettled land" (page 90). David Salmela's house in Duluth, Minnesota, combines Scandinavian motifs with an open plan, demonstrating that a modern house can have old roots (page 110).

For each architect there are different ingredients that make a house, and the strength of the design is in their combination. For a house in Stowe, Vermont, Peter Rose choreographed a sequence of views from country road to dirt driveway, dense wood to grassy meadow, wide-open plain to protected arrival court (page 116). Here, the great experiment that is residential architecture begins long before you even see the house. Karen D. Stein


1

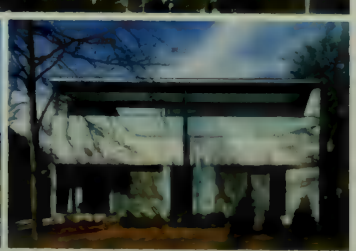

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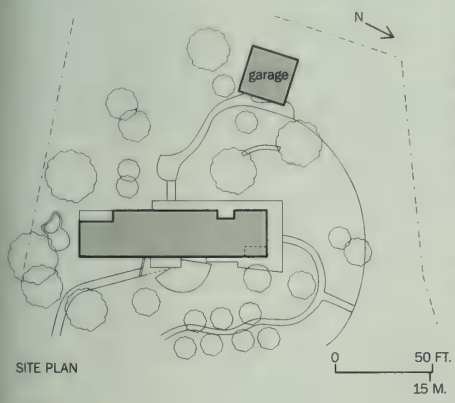

6


7



Inspired by streamlined trailers and a wild setting, **FU-TUNG CHENG** made the Hogan/Mayo House rugged but warm.





SITE PLAN

The siting of the house preserved almost all of the existing trees (above). A Zenlike simplicity is evident in the front elevation (opposite). Landscaping by Adams Design creates a variety of gardens around the house.

by Clifford Pearson

When Michael Hogan and Kathy Mayo hired Fu-tung Cheng to design their new home north of San Diego, they imagined something similar to his first residential commission—a barnlike house with Asian touches built north of San Francisco four years ago. But inspired by the wild vegetation on the property (including eucalyptus, jacarandas, palms, and bamboo), Cheng had a different idea: to design a rugged metal structure as if it were a pioneer in an unsettled land. "I saw the house as an Airstream trailer or an old Army quonset hut from the Fiji Islands," says Cheng.

"At first, Kathy was mortified by all the metal," recalls the designer with a laugh. Luckily, Hogan had known Cheng for many years—first as a tai chi teacher, then as a friend—and trusted him. "All of his projects are imbued with a spirit that is natural, simple, clear, and warm," explains Hogan of Cheng's work. "The materials may change, but I knew there would always be a warmth," he adds. For Mayo, trusting the designer's choices was more difficult, but after making a "leap of faith" during the early stages of the project, she now loves the house.

An old two-story clapboard house had sat on the site and Cheng considered renovating it. But it turned out to be in worse condition than anyone thought, and he ultimately recommended starting from scratch. To minimize the amount of cutting and filling and the impact on the land, Cheng loosely followed the rectangular plan and axis of the original house. In addition, every effort was made to cut down as few trees as possible, since the flora play such an important part in setting the character of the place. Built on a gentle slope, the house looks north and east across a valley. Trees and vegetation block most views of nearby houses where several residents have built corrals for horses and even alpacas.

Hogan and Mayo, each of whom has two grown children from a previous marriage, kept their program simple. "We wanted openness," states Hogan. "It's really just a house for Kathy and me, so we didn't want a lot of rooms." Cheng's design responds to this desire with a straightforward organization. On the main level, the living room, dining room, and kitchen are in one flowing space covered with a curving metal roof and separated from a master-bedroom suite by an enclosed breezeway dubbed the dog trot. Indeed, a very large, very affectionate dog named Niko is usually parked here and serves as unofficial greeter. On the lower level are two bedrooms, as well as laundry, storage, and mechanical rooms.

Trained as an artist, Cheng began working in construction as a student to make money. Later, he became a licensed contractor and earned a reputation as a kitchen designer. "In college, I wanted to be a pure artist," says Cheng. "But my nature is practical. I love to work with my hands, to build. I also enjoy working with other people, rather than alone." So residential design came naturally to him.

At his Berkeley studio, he employs several people trained as architects and one who is a licensed architect. Cheng and his associates sometimes act as design-builders, but the distance between Berkeley and Del Mar prevented that arrangement on this project. Here the firm built

Project: *Hogan/Mayo House, Del Mar, California*
Owners: *Michael Hogan and Kathy Mayo*
Designer: *Cheng Design and Construction—Fu-tung Cheng, Frank Lee, Alice Soohoo, project designers; Robert Ryan, Jud Smith, Chris Tong, Greg Vendena, Janet Szalay, Glenn Gardner, project team*
Engineer: *Robert Lawson (structural)*
Consultants: *Adams Design Associates (landscape); Gage Cauchois Design (lighting); William Guba & Associates (cabinetwork)*
Concrete contractor: *Gene Carranza Construction*
General Contractor: *Beacham Construction*



only the poured-concrete, integrally colored counters in the kitchen and bathrooms, which were shipped in pieces and then installed on site.

From the front, the 2,700-square-foot house appears to be a single metal block wedged into the earth. But from the back, the unified volume breaks apart as decks, a great outdoor stair, and an angle-roofed cube pop up and out. Different materials, including concrete and wood board and batten, also help articulate individual parts of the house, such as the dog trot and an alcove off the dining room. In the same way, the master bedroom has a flat roof rather than the vaulted one above the main living spaces and the dog trot. "I wanted to give it the feeling of a shed attached to the Airstream trailer that is the rest of the house," says Cheng of the bedroom suite on the southeast end of the building.

THE HOUSE HAS A WARMTH ENHANCED BY CONTRASTING MATERIALS: METAL, CONCRETE, AND WOOD.

By carving away at the main volume of the house and attaching various decks and pieces to the rear elevation, Cheng created a variety of outdoor and enclosed spaces that take advantage of the balmy southern California climate. Each of these places has its own personality, ranging from a private concrete terrace off the master bedroom to the exuberant stairs off the back of the house, which can be a fine spot to sip drinks with a crowd of people. At the same time, the great sweep of the projecting roof offers ample shade for sitting on the redwood deck.

Adding to the experience of relaxing outdoors is the craftsmanship displayed on the underside of the roof, where several layers of materials (corrugated metal, 1-by-6 wood sheathing, 2-by-6 wood joists, and metal beams) are exposed for all to see. A similar treatment is used for the underside of the roof in the dog trot, reinforcing the sense that the space is not quite indoors even though it is enclosed.

The barrel-vaulted portion of the house has a steel frame with slender metal columns and curved steel I-beams spaced 12 feet apart, which support the wood joists. The columns are set about six inches inside the walls to show how the house's structural system and its enclosing surfaces work independently. The master bedroom, on the other hand, has an L-shaped, poured-concrete supporting wall and wood framing. A concrete-block retaining wall on the ground level and a poured-concrete wall for the outdoor stair complete the structure.

As Hogan had suspected at the beginning of the design process, Cheng's use of metal and concrete is anything but cold. By combining corrugated metal on the roof and exteriors with richly colored wood on other surfaces, the designer imbued the house with a warmth that is enhanced by contrast. Cheng's experience building concrete kitchen counters proved helpful in this project too. Floors in the master bedroom, the dog trot, the entry of the living area, and the lower level are all concrete. In the master bedroom, the concrete is acid-washed in two different tones—celadon and beige. In the dog trot, the concrete is scored and has the look of terrazzo with its aggregate exposed. Downstairs it is hand-troweled.

Throughout the house, Cheng embedded found objects in the concrete—aluminum automatic transmission-valve covers, ammonite fossils, gears, computer parts, water-pump cams, a circular saw blade, a piece of steel rebar, and naturally polished stones—as well *(text continues)*

The house takes advantage of the sunny climate by providing a variety of outdoor spaces, including a wraparound redwood deck (below) and terraces off bedrooms upstairs and down.





The "dog trot" (above), a transitional space that is enclosed but not air-conditioned, separates the public areas from a bedroom. The concrete wall of a stair (top right) was poured into a plastic-sheet-lined form to give it an irregular surface.









A sense of flowing space is emphasized in the dining and kitchen area by a curving poured-concrete counter and a long horizontal window (partially visible on left side of photo). Various oxides added color to the counter.



The textured ceiling was created by raking plaster with a serrated mastic brush, then applying drywall compound. Cheng did much of this job himself.







MAIN LEVEL



LOWER LEVEL

The clients had asked for openness in the house, and the living/dining room provides an uninterrupted space that flows out toward a wraparound deck (opposite). The door from the dog trot entry to the public portion of the house is on a pivot. Its knob is a Buddhist hand that one of the clients found at a flea market (above). A stair railing that combines wood and steel was inspired by one designed by Carlo Scarpa, says Cheng.

1. *Master bedroom*
2. *Office*
3. *"Dog trot"*
4. *Entry*
5. *Kitchen*
6. *Dining*
7. *Living*
8. *Storage*
9. *Laundry*
10. *Bedroom*
11. *Bedroom/library*

as a few small designed pieces such as tile mosaics and symbols from the *I Ching*. The effect is to inject touches of levity and spontaneity into a material that is usually utilitarian.

Wall surfaces are also treated to provide subtle changes in texture and color—some are painted drywall, while others are hand-troweled plaster. Hues range from celery to wheat to slate blue, and many were hand-mixed by Cheng himself. "The selection of colors was more painterly than intellectual," says the designer.

With lush views all around the house, some designers would have been tempted to use lots of glass. Cheng took a different approach, treating views as precious commodities to be offered sparingly and then adroitly framed. Early on in the design phase, the clients questioned the wisdom of this strategy. But as soon as they moved into the house, they realized Cheng was right. In an alcove off the living area, for example, a small window focuses attention on a graceful sycamore tree. "It's a beautiful effect," states Hogan with satisfaction. Corners tend to have more glazing than walls, and a long, narrow skylight runs along the ridge line of the curved ceiling in the living room. As a result, daylight comes in around the edges of the main living area, providing illumination without overwhelming the space.

The tightly framed windows, the sleek railings on the decks and stairs, and the metal siding conjure different images in the minds of the designer and clients. While Cheng sees a streamlined trailer, Hogan says the house reminds him of a taut but comfortable boat. Whether grounded or afloat, the house has a relaxed sense of movement and space that seems to agree with its residents. ■

Sources

Custom steel: *Carroll Metal Works*
Corrugated-metal cladding: *BHP Steel (Zincalume)*
Corrugated-metal roofing: *BHP Steel (Nu-Wave Corrugated)*
Clear-anodized aluminum windows: *Torrance Aluminum Windows*
Locksets: *Schlage*
Butt hinges: *Stanley*
Aluminum cabinet hardware: *Forms & Surfaces*
Custom concrete counters: *Designed by Cheng Design and Construction*





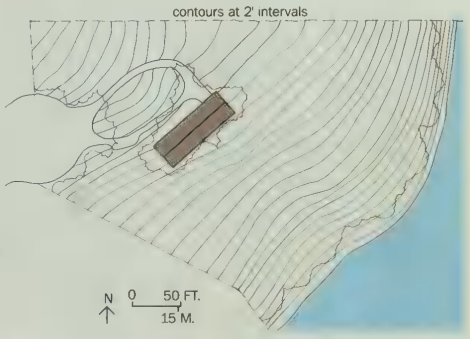
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A house and studio designed by **FRANK HARMON** bring two artists the peace and quiet they need for their work.



by Charles Linn, AIA

The Rozzelle-Ragan residence stands on a wooded lot above a river near Piedmont, North Carolina. When the trees are full of leaves in the spring and summer months, birds and other wildlife become the couple's intimates.



Architect Frank Harmon likes to discuss the biological succession of plants and trees as he cruises the winding rural highways that cut through the forests outside Raleigh, North Carolina. These forests are in a perpetual state of change. Rapidly growing pines shoot skyward from the meadows, only to disappear when overtaken, and then blocked from life-sustaining sunlight, by taller, deciduous trees such as oaks and hickories.

The homes people build for themselves through successive generations evolve in the same way as a forest's ecosystem. The house that suited a farmer with a large family 50 years ago isn't necessarily what the scientist who grows cultures in test tubes somewhere in Research Triangle Park desires. Hence, sprawling houses built by contractors have superseded the farmhouses in this region.

Just as mature, deciduous forests eventually die out and make way for the reemergence of the evergreens, in the case of the Rozzelle-Ragan house, the earlier, utilitarian farm dwelling has succeeded the commuter's familiar suburban house. Like many people today, Ron Rozzelle and Rosa Ragan work at home, although they are not telecommuters: he is a painter, and she restores carousel horses and vintage fairground art. Rozzelle's and Ragan's vocations are so central to their lives that they have elected to commit the majority of the enclosed space in their home to work. And, like many of the old-time farmers who turned carpenter in order to construct the homes they wanted, Rozzelle traded his sable paintbrushes and palette for a hammer and nails off and on over a period of three years, building most of the house himself.

Harmon says he hoped that the house's forms would be reminiscent of nearby farm buildings. They are, but the references are not always obvious. It is easy enough to recognize that the rough-sawn plywood siding, for example, is a modern take on the generic, flat, vertical boards used as siding on barns long ago. Harmon's updated version, however, is painted a muted yellow, not the gleaming white that local dairy farmers once prized. Rozzelle clad the house using hex-head screws, which he painstakingly applied in a perfect grid and then painted a dark red, giving the exterior a precise appearance that an old-time farmer used to driving tenpenny nails with three blows of a hammer probably would not have appreciated.

With very few exceptions, the house was built of ordinary lumberyard materials. The white-painted open rafters on the eaves and those supporting the porch roof; the painted, corrugated-metal roofing; and the large, metal sliding security door that covers a pair of swinging doors leading from the larger porch into the carousel studio are the same as those found on almost any agricultural building in the region.

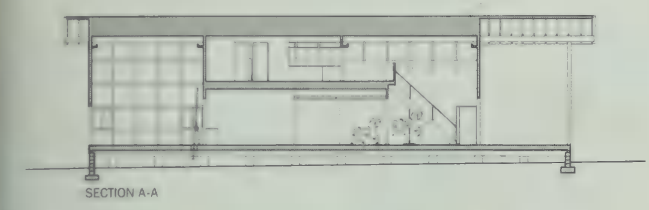
The inside of the house, however, has none of the agrarian references of the exterior—nary a potbellied stove in sight. It looks more like a big-city artist's loft, except for the abundant light coming through the floor-to-ceiling windows and the extraordinary view of the forest. The rooms have white-painted gypsum-board walls and ceilings and polyurethane-finished oak floors, and they are lighted by fluorescent coves and troffers fitted with prismatic lenses.

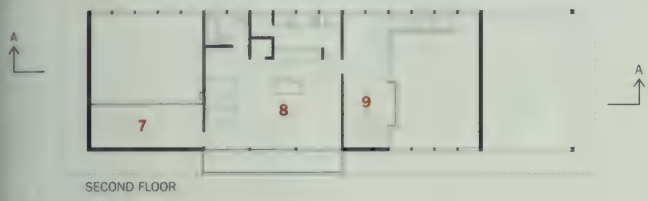
Project: *Rozzelle-Ragan House and Studio, Piedmont, North Carolina*
Owners: *Ron Rozzelle and Rosa Ragan*
Architect: *Frank Harmon Architect—Frank Harmon, AIA, principal-in-charge; Quan Banh, project architect*
Engineers: *Synergetics*



The painter's studio receives soft daylight through windows glazed with ribbed plastic panels. A trap door under the easel opens so that canvases can be lowered and their upper portions painted.

PUBLIC LIBRARY









1. *Painter's studio*
2. *Workshop*
3. *Mechanical*
4. *Sanding and painting room*
5. *Carousel studio*
6. *Porch*
7. *Storage balcony*
8. *Apartment*
9. *Balcony*

Harmon's firm did only half the usual number of drawings for the building, and he and Rozzelle worked out the rest of the details in Saturday morning meetings. Harmon is careful to point out that this kind of architect-owner collaboration doesn't work with every client, but Rozzelle's building experience, artistic sensibility, and attention to detail made him ideal for this approach. "You have to have a builder with a lot of devotion to get the sort of quality this building has," says Harmon. The doors and laminated-wood window frames are a good example of Rozzelle's handiwork. He glazed most of the openings with double-celled polycarbonate sheet, which has a relatively high R-value and provides diffused light with few shadows—light that is ideal for the sorts of tasks performed by artists. Rozzelle installed aluminum sliding windows in the remaining openings.

THE INTERIORS ARE REMINISCENT OF A CITY ARTIST'S LOFT—EXCEPT FOR THE EXTRAORDINARY VIEWS OF THE FOREST.

Ragan's studio is at the southeast corner of the house near the front door, because she doesn't mind being interrupted by the occasional caller. Ragan also needs ready access to the large covered porch, where unpleasant, and sometimes noxious, operations like paint removal can be performed in plenty of fresh air—and away from the studio's polished oak floors. The floor of the porch is wood decking finished with marine fiberglass.

A room off the studio is set aside for jobs that are best performed in a self-contained environment, like the sanding and fine painting that comprise the final steps of restoring the carousel horses. The doors are equipped with filters, and the room is ventilated by a heavy-duty exhaust fan. An office and library are located on the balcony just off the stair leading to the apartment.

Rozzelle's studio is at the opposite end of the first floor, where he works in absolute privacy. A custom-built easel illuminated by a row of suspended track lights allows the artist to paint in the same incandescent light his work will most likely be shown in. By opening a narrow trap door beneath the easel, Rozzelle can lower a canvas and paint the upper portion without getting up on a ladder. A metal ladder leads to a balcony where he stores canvases and supplies. A workshop is located between Ragan's studio and Rozzelle's, so the two can share tools without disturbing each other.

The diminutiveness of Ragan and Rozzelle's apartment relative to the studios is a testament to the major role of work in their lives. At about 400 square feet, the upstairs living area brings to mind an efficiency apartment, except for one wall of floor-to-ceiling glass doors that lead to a balcony jutting into the forest. The balcony allows the artists to enjoy extraordinary views of flora and fauna, and the couple spend their evenings there chronicling the lives of the cardinal, owl, and woodpecker families they get to know each season and listening to the sound of the river nearby. Despite the apartment's small size, it is not cramped or cluttered: Rozzelle and Ragan are not encumbered by many possessions.

Once they became successful, early farmers here would build new homes for their families and convert their original homes—which were usually no more than log cabins—into utilitarian structures devoted to storing grain or drying tobacco. Ragan and Rozzelle plan to follow the tradition. As they prosper, they will use this building solely as a studio and guest apartment, and build a new home nearby. ■

Sources

Glazing: *Polygal*

Sliding windows and glass doors: *Binnings*

Paint: *Sherwin-Williams*

Gypsum board: *Georgia Pacific*

Fluorescent strips and troffers: *Lithonia*



The stepped forms of the house were inspired by Art Deco apartment buildings in the area, explains Jennings. "In its own way, it's contextual," says the architect.

PURLINGBAR PUBLIC LIBRARY

Working for a longtime client on a prime San Francisco site, JIM JENNINGS designed an art-filled house that engages the city.



by Clifford Pearson

Working on a house for nine years gives an architect rare perspective. So when Jim Jennings talks about the residence he designed for Steven and Nancy Oliver in the Telegraph Hill neighborhood of San Francisco, it's clear he is fully steeped in the subject. And what he emphasizes is not the project's formal qualities or the precision of its details (a precision for which he is well known) but the way it engages its urban context. "How do you make architecture in the city? That's what this project is all about," Jennings says.

Part of his answer is in the massing of the three-story structure, which echoes the stepped volumes of its neighbors and Art Deco apartment buildings in the area. Part of it is in the simple geometric forms that read clearly from nearby hillsides and fit into the residential cityscape. And much of it lies in the way the house provides a multitude of outdoor experiences. Indeed, not only does the house have a generous front court, but nearly every major room has its own outdoor space with its own character and dimensions. Forging such bonds between indoors and out is common in southern California, but much less so in the foggy, cool San Francisco climate. "I wanted to explore how you modulate the experience of being outside in the city," says the architect.

That the house took so long to complete is not surprising considering San Francisco's notoriously difficult approvals process, which in this case took three years. But the most important factor was that the clients enjoyed the creative process so much they were in no hurry to put an end to it. "The problem was I was having too much fun," explains Steven Oliver, who owns the construction company that built the house and was actively involved in the entire project. He also sits on the board of directors of the San Francisco Museum of Modern Art and is an important collector of postwar art.

The Oliver-Jennings collaboration is a long-term affair. Oliver commissioned Jennings to renovate a weekend house on a sheep ranch north of the city back in the 1980s and now plans to go forward with a new guest house for the ranch designed by Jennings. He cites Jennings's clarity of vision in helping to keep the projects focused.

Oliver has the roll-up-the-sleeves personality of a good builder and enjoys playing the role of patron—to both artists and architects. At his upstate ranch and now his city house, he runs an artist-in-residence program, which provides visiting talent with lodging and a hospitable environment for weeks at a time. With Jennings, he offered much latitude, asking only for a good place to display art and entertain and a house that would be different from his country ranch. To that end, Jennings developed a design that is more formal and controlled and one where paintings and drawings, rather than sculpture, are given pride of place.

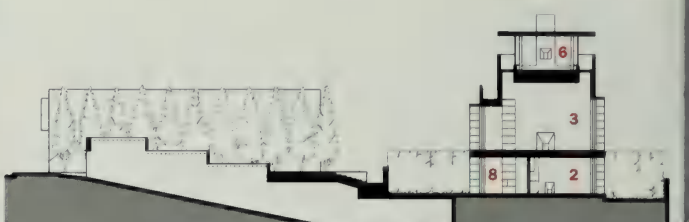
"THE PROBLEM WAS I WAS HAVING TOO MUCH FUN," SAYS THE CLIENT.

The city house replaces a three-story apartment building that set the limits for the project's footprint and height. Although the sixth-of-an-acre site is generous by San Francisco standards, it is a tight fit for a 5,200-square-foot house with underground parking for nine cars and lots of outdoor spaces. Jennings had wanted to pull the driveway off a small lane to the east, but the city wouldn't allow any change in access from the

Project: *Oliver House, San Francisco*
Owners: *Steven and Nancy Oliver*
Architect: *Jim Jennings Architecture—Jim Jennings, partner-in-charge; Cheri Fraser, project architect; John Holmes, Jay Kammen, project team*
Interior Designer: *Gary Hutton Designs*
Engineer: *Sear-Brown (structural)*
Consultants: *Delaney and Cochran (landscape); Dodt Electric (lighting); Steinbach Cabinets (custom pocket doors)*
Custom ironwork: *CW Ironworks—Chris Wilhelmsen, Pete Wilhelmsen, Dennis Wilhelmsen, project team*
General Contractor: *Oliver and Company—Steve Chambers, superintendent of construction*



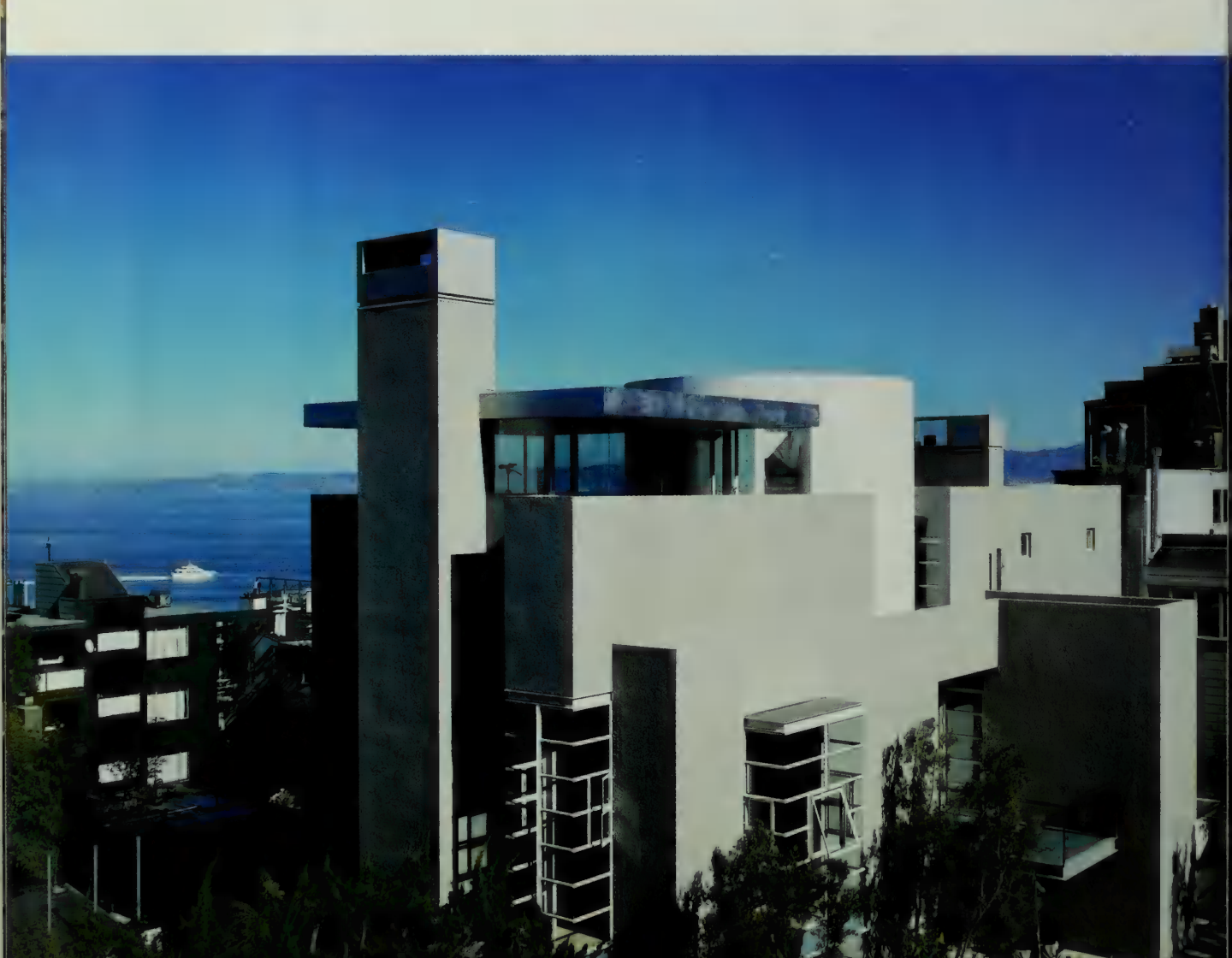
EAST-WEST SECTION



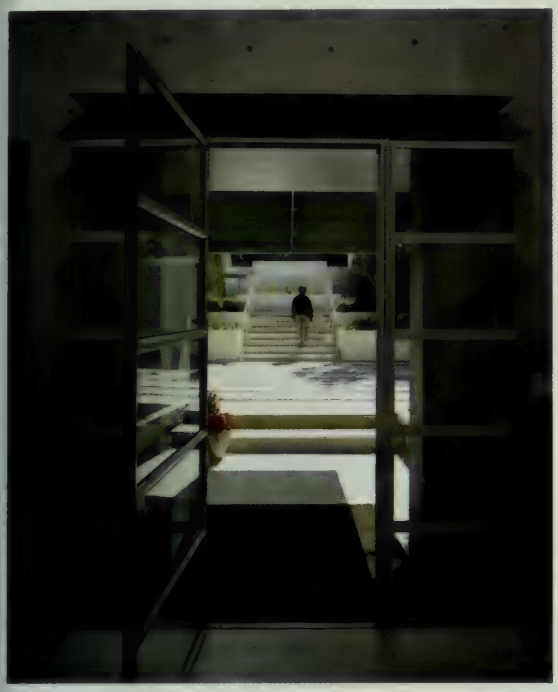
NORTH-SOUTH SECTION

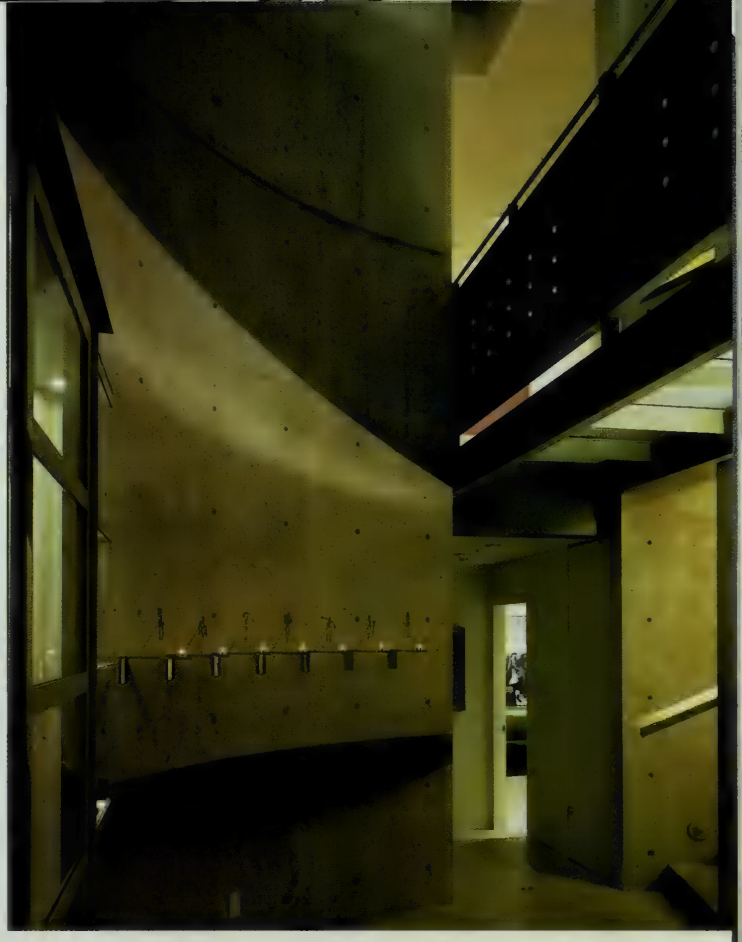
1. *Garage level*
2. *Living/studio*
3. *Living*
4. *Dining*
5. *Kitchen*
6. *Office*
7. *Master bedroom*
8. *Bedroom*

The front court (below) is a landscaped platform with the driveway and parking below (sections above).



PUBLIC LIBRARY





The front court (above) sits above the driveway, which leads to an underground garage with a turntable for cars. The entry hall (right) is a three-story space that introduces the interior palette of materials: concrete, punched metal, and plaster walls.

arrangement established by the apartment building, so the house is entered frontally, on axis with the driveway.

The visual and structural anchor of the house is a 50-foot-tall, 12-inch-thick, poured-concrete cylinder rising from its center. This towerlike form contains an elevator, stairs, and translucent glass bridges connecting the two sides of the house, and serves as a seismic brace for the entire structure. "The cylinder is a transitional space, not one to be occupied," explains the architect. While the cylinder is at the intersection of the two axes running through the house (front to back and side to side), it is slightly off-center. "I made no attempt at symmetry," says Jennings. "The position of the cylinder was determined by the site"—by its alignment with the entry and the east-west axis.

Indeed, the blocks on either side of the cylinder are of different sizes and proportions. Each room in the house is also unique; ceiling heights vary, even on the same floor. The idea was to shape each space for its function and give each its own character. The living room on the second floor has a 15-foot ceiling, while the dining room and kitchen on the same floor have ceilings that are 12 feet high. An office on the top floor has a low ceiling, just eight feet high, but feels spacious, since large panes of glass surround the space and provide grand views over the bay to Alcatraz and the Golden Gate Bridge.

The strong presence of the concrete cylinder, however, imbues the house with a clear sense of order. "The cylinder makes itself felt no matter where you are," Oliver says. And the straightforward procession of spaces along an axis makes all of the rooms fit together. "The axes aren't theoretical conceits," states Jennings. "They're experiential, directly affecting what it's like to move through the house." On each floor, the main axis of the house is anchored by fireplaces rising at both ends.

Striking the right balance between mass and light was a key concern for Jennings. "It was important for the house to have a sense of volume, of solidity—not just in the cylinder, but in the walls too," says the architect. "In terms of relating to its neighbors" with openings and windows, Jennings wanted the house to be "discreet, inscrutable."

But he worked hard to make the house feel expansive on the inside, employing large bay windows that project out from the building envelope and offer oblique and straight views. "The typical approach to views is like frontal nudity, which is not as interesting as oblique views,"

LAYING DOWN AXES WAS MORE IMPORTANT THAN SYMMETRY, SAYS JENNINGS.

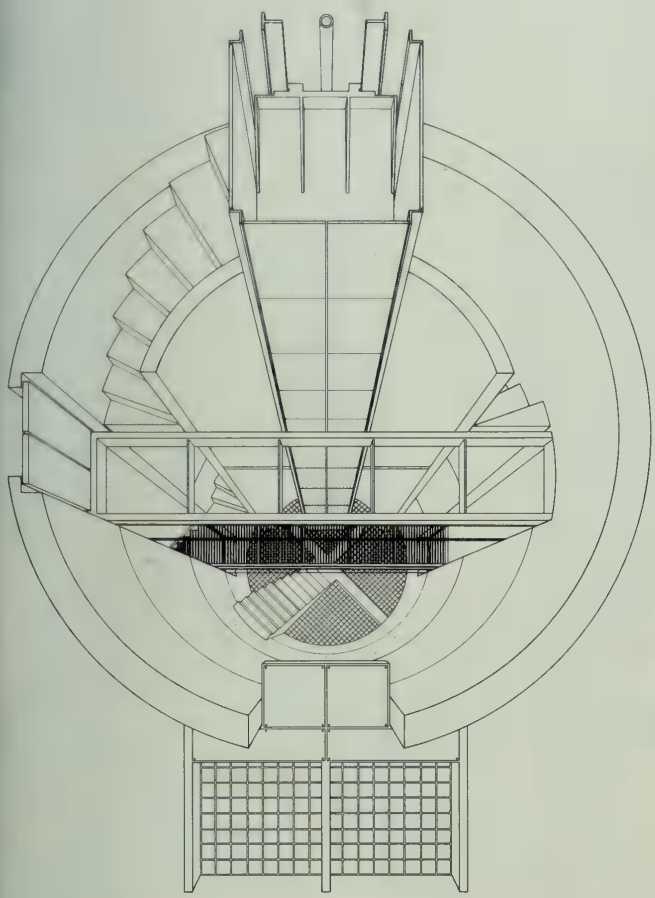
states Jennings. The architect also enhanced the sense of expansiveness by topping the cylinder with translucent glass to bring light in from above. The cylinder injects an intriguing element of surprise into the house. "From the outside, you think the tower is a dark space. But when you get inside, you discover it's filled with light," Jennings says.

Still zoned for multifamily use, the house was designed so the bedroom suites on the first floor can act as independent apartments with their own entries and kitchenettes. This arrangement allows a visiting artist some privacy and the chance to be with his or her family. Upstairs are the main living spaces for the Olivers, which offer plenty of room for entertaining and large wall surfaces for artwork. The master bedroom and a home office are on the third level.

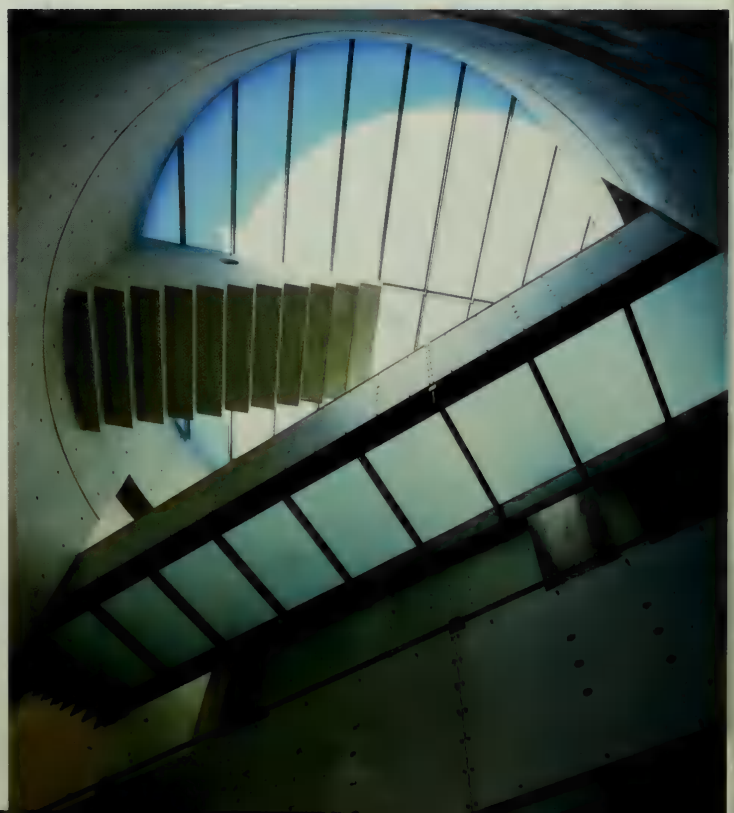
Materials and colors were selected to serve as *(text continues)*

PLANTANGARA PUBLIC LIBRARY

The 50-foot-high cylinder is a transitional space, the architect says, used for circulation, not for occupying. By pulling all of the vertical circulation into this central tower, Jennings was able to make a clear distinction between service areas and "served" spaces. The 12-inch-thick poured-concrete walls of the cylinder (opposite) act as seismic support for the entire house. The wings on either side of the cylinder are wood-framed. Bridges across the cylinder have translucent-glass floors. Cantilevered stairs hang above the third-floor bridge (right, top and bottom) and lead to a glass roof terrace (below). The contrast of solid and transparent materials heightens the impact of each.





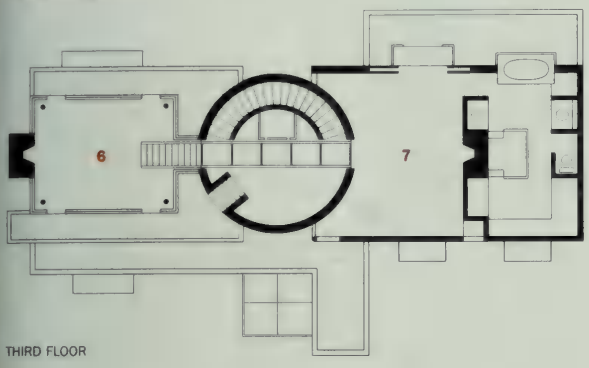




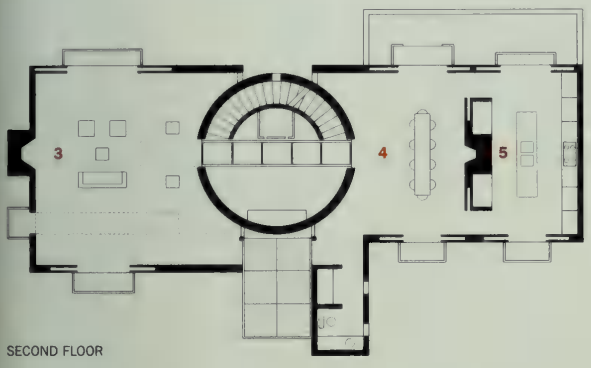


Fireplaces at both ends of the house (and on all three floors) reinforce the design's cross axis. Rick Arnitz's painting *Tapa* (1991) hangs above the fireplace in the living room.

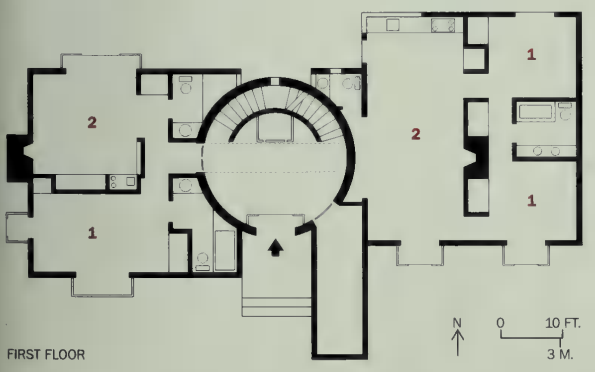
1. *Bedroom*
2. *Living/studio*
3. *Living*
4. *Dining*
5. *Kitchen*
6. *Office*
7. *Master bedroom*



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

By varying ceiling heights and dimensions for each of the major rooms, Jennings gave each its own character. In the living room (right bottom), a tall ceiling and bay windows imbue the space with a sense of drama. Pocket doors in the bay windows can be closed for more intimacy. In the office (right top) wraparound glass and a terrace (with hot tub) direct one's attention outdoors.





quiet backdrops to either the formal elements of the architecture or the artwork on display. A putty gray stucco, for example, was used on the exterior of the house to reinforce the blocky forms of the wings on either side of the cylinder. "I wanted a color that was no color," explains the architect. Inside the house, polished maple floors and neutral colors for walls allow a rotating collection of mostly post-1970 paintings and drawings to take center stage. Indeed, the walls are plaster applied over plywood, the same surface found in most museums. Two pieces of art were commissioned specifically for the house: a video by Ann Hamilton in the second-floor powder room and a thread sculpture by Fred Sandback in the entry hall.

The Oliver House, though, is not a museum for living in. It is a gracious home with rooms that accommodate both large parties and private conversations and where the outdoors is always just a couple of steps away. Change is an option offered by the architecture. Close the sliding pocket doors installed in the bay windows and you create a sense of intimacy. Hang a painting in a room with different proportions and it seems to change character. Although formal, this house is anything but static. ■

Sources
Steel windows and doors: *Hope*
Ambient lighting: *Belfer/Wedge*
Downlights: *Regiani*
Custom maple cabinetwork: *Designed by Jim Jennings*
Custom pocket doors: *Steinbach Cabinets*

1. *Courtyard*
2. *Entry*
3. *Living/dining*
4. *Kitchen*
5. *Breakfast room*
6. *Master bedroom*
7. *Office/laundry*
8. *Garage*
9. *Kennel*
10. *Mechanical room*
11. *Hunting room*
12. *Guest room*



SECOND FLOOR



SITE PLAN





FIRST FLOOR



Scandinavian vernacular architecture and Modernist design principles inform a lakeside Minnesota house by **DAVID SALMELA.**

by Linda Hallam



In a restrained play on a traditional Norwegian motif, architect David Salmela designed the 24-inch-diameter exterior entry column from a white pine tree cut on the property. In a nod to Modernism, the maple plank front door, set on angle, is devoid of ornamentation and trimmed with off-the-shelf hardware.

Known for his bold use of geometric forms, rugged materials, and bright colors, architect David Salmela of Duluth, Minnesota, finds progressive design can pull back as well as push forward. "It's a modern house," says Salmela of the 3,500-square-foot lakeside home he designed for clients Peter and Cynthia Emerson. "The program is based on the principles of Modernism: practicality, openness, common spaces, the division of the master bedroom for privacy. But it has old roots, too."

Salmela, who has produced residential and institutional work in Minnesota and Wisconsin for more than eight years, the last four as his own one-man firm, says that because half of Minnesota's population has some Scandinavian ancestry, the folk memory of immigrants and early vernacular houses plays an important part in the contemporary shared culture. In fact, the Emerson house, located 20 miles from Duluth, was built by local carpenters and brothers Brad and Curt Holmes, who are of Finnish heritage. "The idea is to draw on our roots here, to incorporate modern into a Minnesota vernacular. That, along with the symmetry and order of classicism, was the vocabulary we used for the house," he explains.

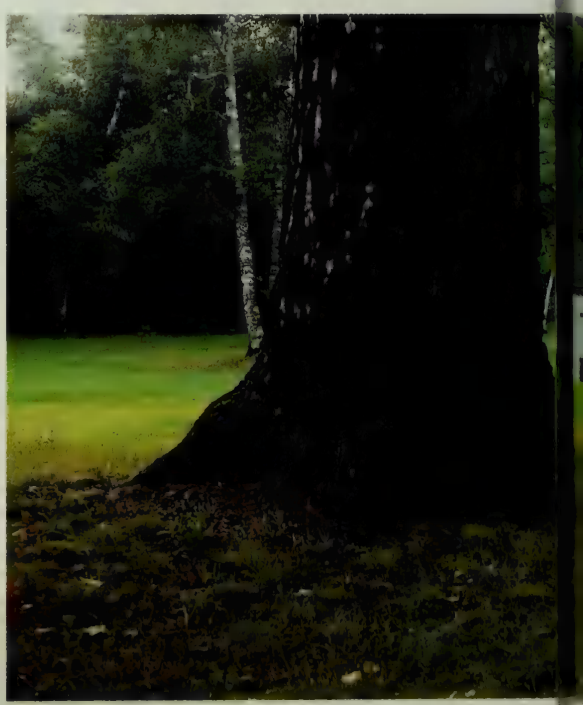
Linda Hallam is a book editor with the Meredith Corporation in Des Moines, Iowa. Her books include Easy Style *and* Express Yourself With Color. *She was formerly homes editor at* Southern Living *magazine.*

Set among towering white pines, the residence takes advantage of a southern exposure with lake views. By nestling the steeply roofed house into a slope and partitioning it into a core and two wings, Salmela visually reduced it to the modest scale the clients requested. The two wings—the master suite and living area on the south (lake) side and the tandem garage on the north—flank the center core to create a protected courtyard. As a play on traditional Scandinavian architecture, the 15-foot-wide garage front is detailed with exposed trusses replicated from a nearby village town hall. Walls are clad in lapped cedar siding and sealed, like all the exterior cladding, with opaque white stain. The Emerson house cost approximately $138 per square foot of heated space.

To visually reduce the size of the master wing, Salmela made an oversized six-foot-square window in the wing's gable end. In contrast to the garage wing, exterior walls are board-and-batten cedar. Battens are 1½ inches deep rather than the more common ¾-inch, for extra shadow definition. The angled, whitewashed brick chimney visually pierces the cedar shake roof. The architect also manipulated the scale and *(text continues)*

Project: *Emerson Residence, Duluth, Minnesota*
Architect: *Salmela Architect—David D. Salmela, AIA, project architect*
Engineer: *Kreck & Ojard (structural)*
Consultants: *Coen + Stumpf + Associates (landscape); Rod & Sons Carpentry (casework)*
General Contractor: *Rod & Sons Carpentry*

Located 20 miles from Duluth, Minnesota, the Emerson house is set among white pine trees with views of a nearby lake. "In the winter, the days are short and the light is precious. Not only do we have daylight through windows and French doors, but we have moonlight through the dormers," says Cynthia Emerson.









Slate flooring continues the bluestone paving used outside (above). Counters are wood and slate. Vaults in the kitchen and family room are constructed from tie beams recycled from previous use, and the white-painted slatted staircase is in keeping with the house's Scandinavian motifs (left). The backs of the brick hearth and the wood television cabinet, both purposely exposed, jut into the master bedroom (opposite right). The dining room is surrounded by windows like a summer porch (opposite left).





materials of the formal entrance. From the first view of the house, the oversized front dormer acts as an immediately perceivable icon. The dormer is repeated on axis as an interior clerestory window and a rear dormer bathing the second level in natural light.

Inside, floors on the first level are slate tile, warmed by radiant heat, echoing the bluestone courtyard walkway. Walls and trim are painted stark white, mimicking the white exterior stain. The architect captured the open spirit of Modern architecture and the ambience of Scandinavian lodges for the kitchen/living/master wing by vaulting the 17-foot ceiling with 10-by-12 tie beams recycled from old buildings. Load-bearing walls were designed with steel-reinforced wall headers to absorb the loads. And in a restrained nod to the regional vernacular, the tongue-and-groove pine ceiling was fitted in place, then sprayed with water for an appearance of age. The tongue-and-groove planks were also fitted vertically inside the dormers, which enhance the light above the lake-facing French doors.

"IT'S A MODERN HOUSE," SAYS ARCHITECT DAVID SALMELA. "BUT IT HAS OLD ROOTS, TOO."

With private spaces arranged on the east side, the more public spaces—the dining porch and the open kitchen—are clustered along the south and west sides. Combining porch with sunroom, Salmela employed awning windows, with removable screens, for the three open sides. The two skylights in the barrel-vaulted, tongue-and-groove ceiling frame views of an 80-foot-tall white pine tree to the east and a maple to the west. Below the vault, the pilasters are the interiors of 24-inch-diameter support columns cut, like the column at the entrance, from white pine trees on the lakefront property.

In contrast to the stark white porch pavilion, the adjacent breakfast room and kitchen share the punch of color from a painted blue-green freestanding cabinet that is accessible from both sides. With glass shelves and upper double glass doors crafted from barn sash, the cabinet focuses light without blocking it. For openness, all other cabinets are tucked below counters. In keeping with the palette of natural materials, counter surfaces are sealed bluestone. To provide contrast, Salmela chose the light-reflecting quality of sealed maple to clad the counter below the board-and-batten gable end wall. Punctuated by a six-foot-square window, the wall gives the space the ambience of an enclosed summer porch.

To contribute to this effect, the architect pulled the built-in cabinets used as the pantry to the stairwell—a location convenient to the family entrances from the garage. (For accessibility into the long, narrow garage, entrances are on the front and rear; see plan, page 110.) The stairwell, which is modest in scale but whose detailing is in keeping with both Modernist and Scandinavian design, contributes a simple design element with vertical 2-by-2s used as screening slats for privacy from the entry.

A clerestory window under the steeply pitched roof draws precious light to the second floor, which is planned as a guest space. The window, also made from barn sash, floods the two bedrooms with natural light, dispelling any notion that these are secondary spaces. Floors are natural pine, sealed for light-reflecting shine. Tucked under the eaves, the guest bath offers an innovative solution to tight space. For a continuity of materials, the sealed, slate-tile counter, laid over maple, repeats the flooring material. A skylight opens the windowless space to natural light. "There's never a dark house with David, and not many hallways," explains carpenter Brad Holmes who, along with his brother, has worked with Salmela on several projects. "His art is that he knows how to work with light."

"The understated quality is its strength," says Salmela of the Emerson house. "We wanted the house to feel as though it belongs here; sometimes that's a quality missing in contemporary architecture." His clients agree. "It's an honest house," Cynthia Emerson says. "It is what it is. And there's not a thing about it we would change." ■

Sources

Prepainted wood windows with clear low-E argon glass, wood doors: *Marvin*
Clear low-E argon skylights: *Velux*
Locksets, hinges: *Schlage*
Custom cabinetry: *Designed by David Salmela, fabricated by Rod & Sons*
Paints, stains: *Pratt & Lambert*
Slate: *Hilltop Slate*
Dining chairs, stools, tables: *Room & Board*
Interior ambient lighting: *Progress*
Track downlights: *Troy*
Task lighting: *Lucifer*
Exterior lighting: *Lampas*

With sensitivity to the landscape and an experimental use of materials, **PETER ROSE** crafts a mountainside country retreat.



Located on the western slope of Mount Worcester in northern Vermont, the project consists of a main house, with walls of concrete block, and a guest wing, clad in tongue-and-groove red cedar. Both are roofed with lead-coated copper.





A brise-soleil of Douglas fir filters the sun on the west elevation. The terrace is made of Maine slate.

PRINCETON UNIVERSITY LIBRARY



by Nancy Levinson

Multiplying narratives" is a phrase Peter Rose uses when describing the country residence he recently completed for a couple in Stowe, Vermont. The practical-minded might dismiss the description as an architect's overly literary conceptualization of a house. But here it seems an illuminating metaphor for the visitor's experience of this satisfyingly complex project, first as a sequence of buildings in a landscape and second as a series of spaces that reveal a rich exploration of material and craft.

An essential endeavor of any project is to determine the relationship between building and land. The intricacies of this process are multiplied when the site is 160 acres located on the western slope of Mount Worcester—a north country landscape of granite peaks, abundant maple, beech, fir, and spruce trees, wide meadows, and, everywhere, the kind of views that define the popular image of this state. Into this seductive countryside the architect was asked to fit an extensive program. The client, a couple from Montreal with adult children, wanted their country retreat to include not just a main house with a four-bedroom guest wing, but also a caretaker's house, a three-car garage, an equipment shed, a horse barn, paddocks, and a tennis court.

Working closely with landscape architect Dan Kiley, Rose grouped the main buildings—house, barn, garage—just where the slope becomes gentle enough to accommodate construction. The house is halfway up the steep, wooded site, at an elevation of 1,200 feet, providing views of a pond, a meadow, and, in the distance, Mount Mansfield, the state's highest peak. The approach to this cluster of *(text continues)*



At night the illuminated house becomes a beacon for guests as they drive up a winding dirt road and alongside a meadow after passing a roadside caretaker's cottage (above). The dormers on either side of the chimney bring additional light to the study (right).

Nancy Levinson, a Cambridge-based RECORD contributing editor, is associate editor of Harvard Design Magazine.

Project: *Stowe, Vermont, Residence*
Architect: *The Office of Peter Rose—Peter Rose, principal; James Dallman, project architect; Emily Kuo, Dallas Felder, Hani Asfour, David Griffin, project team*
Engineers: *Nicolet Chartrand Knoll—Rafir Matta (structural); Irving Graif and Associates—Irving Graif (mechanical)*
Consultants: *The Office of Dan Kiley—Dan Kiley, Peter Meyer (landscape); George Sexton Associates—George Sexton, Jean Sundin (lighting)*
General Contractor: *Donald P. Blake Jr. Inc. Construction—Donald P. Blake Jr., Michael Menard*

The 18-foot-high living room is a study in the harmonious mixing of materials: cherry floors, mahogany cabinets, plaster walls, fir ceiling and rafters, and steel beams. The fireplace surround is Kasota limestone and the chimney is sand-struck brick.





1. *Dining room*
2. *Sunroom*
3. *Game room*



SECTION A-A

The dining room sideboard is mahogany (above). To achieve different reflectivities in the alcove above it, the large wall surface is clad in stainless steel, while the side walls are of cold-rolled steel. The mahogany windows of the passage connecting the main and guest houses are, as elsewhere, custom (right). The stair railing is made of ¾-inch-diameter steel tubing.





The master dressing room closets are Douglas fir. Instead of using hardware, the architects carved away part of the doors to create pulls and a decorative pattern.

1. *Main entrance*
2. *Living room*
3. *Study*
4. *Dining room*
5. *Sunroom*
6. *Master bedroom*
7. *Pantry*
8. *Laundry*
9. *Mudroom*
10. *Bedroom*
11. *Sitting room*
12. *Terrace/porch*
13. *Open to below*
14. *Balcony*
15. *Game room*







The exposed truss in the master bedroom is southern pine and the walls are tongue-and-groove Douglas fir (above). The plan provides most of the main rooms westerly mountain views (left).

structures is a carefully composed succession of movement, view, and entry. Leaving the main road, visitors drive up a curving dirt road, through the woods, and past the caretaker's house. As the road ascends, the woods thin out across a meadow, and there's a first glimpse of the house. A few hundred feet up, the barn looms into view. Finally, circling around the shed-roofed garage, visitors arrive at the entry court, defined by house, garage, low stone walls, and paddock fence. For this sheltered space, Kiley selected a ring of American beech trees, a natural complement to the grouping of buildings.

For the main and guest houses, Rose and project architect James Dallman used a range of materials—block, brick, stone, wood, steel, aluminum, tile, glass, and plaster. Evidence of their efforts to rethink the typical, to refine the standard, is everywhere. (Both cite the important contributions of contractor Donald P. Blake.) Concrete block, for example, rarely figures in rural residential architecture in New England, a

RETHINK THE TYPICAL, REFINE THE STANDARD, SAYS THE ARCHITECT.

region that is almost obsessively loyal to its clapboard and shingle heritage. Its use here is part of Rose's ongoing research into concrete-masonry unit (CMU) technology. "The concrete blocks in this house are buff-colored with subtle variations of hue, which is achieved by putting red sand and warm gray limestone in the cement mix," the architect explains. "Their texture varies, too, as a result of changing the quantity of water from batch to batch." But more than material technology accounts for the CMU; just as important is the architect's conviction that in a culture dominated increasingly by ideas of the ephemeral and virtual, architecture ought to be durable and real. "Anything that costs as much as architecture costs, that effects such significant changes on places and people's lives, and that is often around for a long time, should be able to endure and age *well*," Rose says.

Inside, the same readiness to experiment makes the house seem, from room to room, a kind of theme-and-variation of texture, craft, and detail. The architects have, for instance, designed a series of light fixtures, using various combinations of steel, brushed aluminum, and sandblasted glass. Included in this group are the pendant fixtures in the living room; the elegant light shelf in the kitchen, in which halogen spots play peek-a-boo with steel; the narrow steel strip of lights hinged to the wall above the dining room sideboard; and wall-mounted bathroom fixtures whose soft light turns the mirrors they bracket into sources of flattery. The built-in cabinetry that is an essential element of almost every room, spatially as well as practically, becomes another such subject of study.

The clients, who selected Rose after interviewing a dozen firms over a one-year period, recall, "We wanted someone who approached architecture as art." As a result, the design and construction processes were "challenging," as one of the clients recalls. Rose and Dallman "made us question some of our initial ideas of what a house could be," she says. "When concrete block was first suggested, it seemed such an odd material to use in the country. Until the steel beam in the living room was installed, we weren't sure that we wanted to leave it exposed. But now we wouldn't want the house without the block or steel. The process wasn't always easy, but the house is far better for it." Rose agrees. "Architecture is such a dynamic process—there is no single instant when design happens." ■

Sources

Concrete block: *Superior Materials*
Brick: *Cadillac Brick*
Lead-coated copper cladding, roofing: *Burrell Roofing*
Fixed mahogany double-hung windows, mahogany and glass entry door: *William Parry Windows*
Interior solid-core doors: *Patella*
Oil-rubbed bronze handles, locksets: *Nanz Custom Hardware*
Nickel-plated bronze hinges: *Merit Hardware, Rajack Hardware*
Living room cabinets: *A. R. Foss*
Wood flooring: *Sterling Hardwood Co., Kaswell Flooring*
Lighting: *Edison Price, Nulux, Lightolier, Lutron*



Through a design process both cerebral and pragmatic, LESLIE GILL AND BRYCE SANDERS house a family and its myriad collections.



The carriage house shell of the Watrous-Weatherman residence had been restored by previous owners. The architects' "insert" respected this front while integrating storage, display, and a stair (opposite).

by James S. Russell, AIA

Leslie Gill points to clay-green leaf forms painted on panels in her office conference room. The office is in New York City's SoHo district, perhaps one of the most densely built and least natural environments in America. Gill is talking about landscape. "I have been studying the visual impact of the landscape in paintings and how it can be addressed as an idea," she says.

This is curious, because landscape seems to have little to do with the project she is discussing: the renovation of the Watrous-Weatherman residence in Brooklyn. Located in only a slightly less manmade context than SoHo, it started as an almost-windowless, irregularly shaped landmarked carriage house that took up all but a tiny fragment of its site. But in the end, Gill not only constructed a kind of landscape no one thought could exist in such a location; she and her collaborator, Bryce Sanders, created it through a cerebral process of discovery that involved both clients and architects, a rare and daunting feat given the clients' complex needs.

Those needs went far beyond reworking the carriage house for the clients—Peter Watrous, Bess Weatherman, and their two children. There was the issue of Watrous's "incredible amounts of stuff," says Gill. Watrous is a writer, and stacks of mail come in every day with material to be considered. But he is also a collector. "Where to begin?" he muses. He collects Mexican ceramic figures from Ochumichu, including foot-high figures of an entire funeral procession. He also has a beaded, folk-art Haitian flag collection, Beaux Arts paintings by his great uncle Harry Watrous, boat models, paintings on wood by Steve Klein, and cartoons by Gary Panter. There are thousands of books and recordings.

"We were aware that architecture could do something beyond fix planning problems," explains Weatherman. But the couple described their aspirations to Gill and Sanders almost entirely in pragmatic terms. Indeed, it was the arrival of their second child that spurred the couple to renovate the one-bedroom, 1860s house. They asked for two additional bedrooms, more light in the back, and storage for the collections. They wanted to keep the existing garage and make the basement—accessible at that time only by an outdoor areaway—more useful.

Gill invited Bryce Sanders, with whom she had collaborated in her earlier partnership with Karen Bausman, to engage in a dialogue, with the intention of distilling something singular and essential out of these unwieldy requirements. The architects agreed that a deep understanding of the program could lead to a design that would be more fully realized than the wrapping of functional needs in attractive packaging. Hence, recalls Watrous with some amazement, "They measured and catalogued everything. They interviewed us for months."

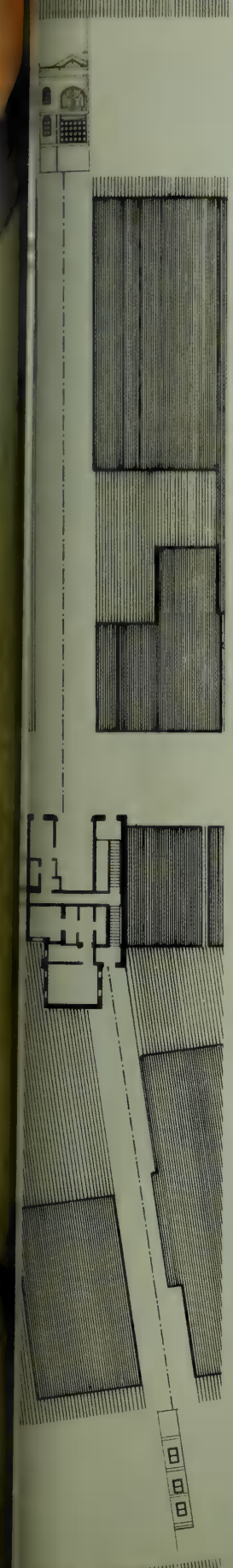
Since Sanders had his own firm, he and Gill usually worked apart for awhile, studying the problem or reiterating a solution, then met to share ideas. "At certain points, this was seminal," says Gill. "Two visions can come together, coexist, and enhance each other."

Gill tried out schemes with a center stair. Sanders worked on one where the stair crept up the side. "The project was driven by the section," explains Sanders. Ultimately, the scheme coalesced into what the architects call an "insert," a steel-framed bay system that incorporates a modular subsystem for framing the stair. This runs from front to back and integrates means for storage and display.

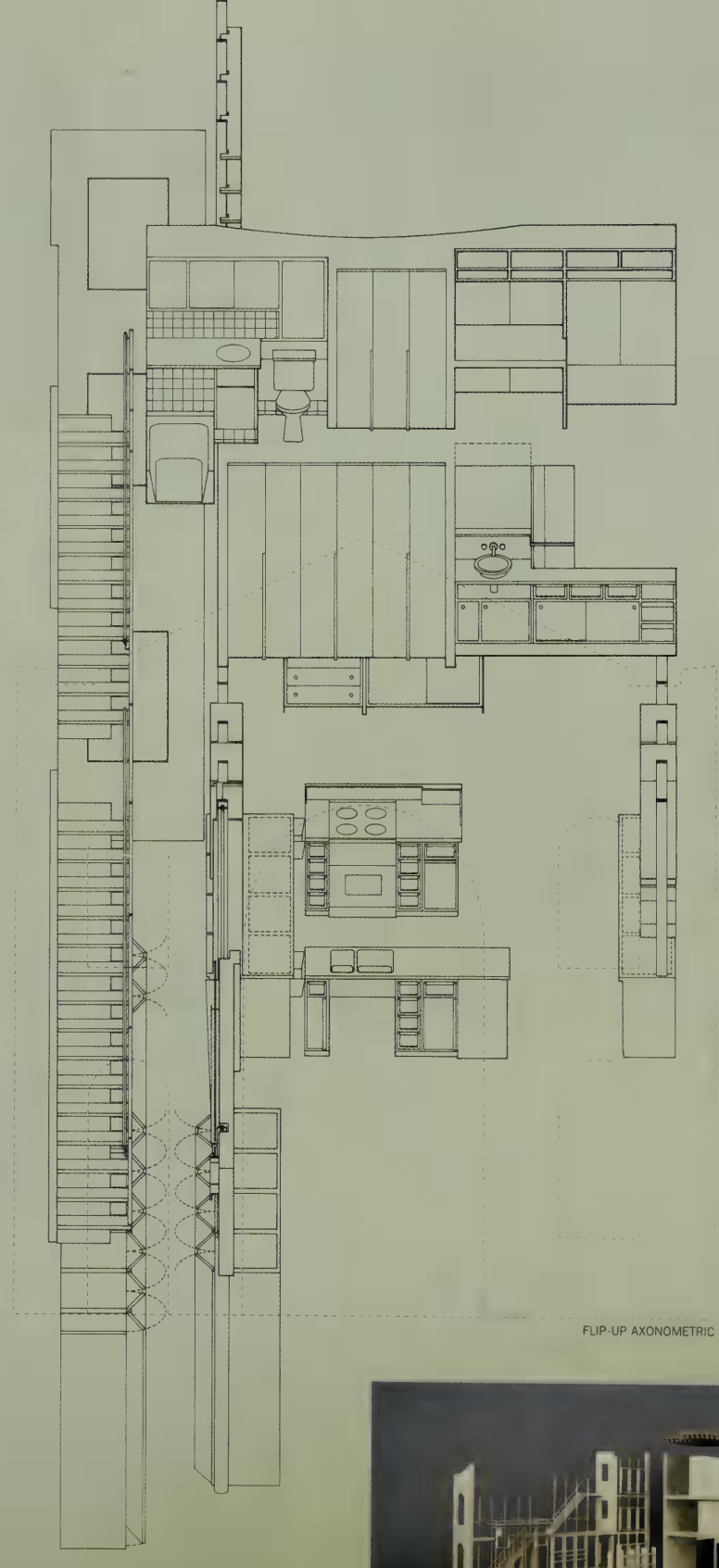
To the casual observer, the system's controlled, modular transformation from stair to tubular picture rail to book shelf might seem unsuited to the irregular volume of the existing house. But the architects never lost sight of the ultimate goal: to bring order to this potential chaos of accumulation. Having handled storage in the vertical circulation system, they dealt with other issues less rigidly. They tucked two small children's bedrooms on a mezzanine above the second *(text continues)*

Project: *Watrous-Weatherman residence, Brooklyn*
Architects: *Leslie Gill Architect, Bryce Sanders Architecture/Design—Celia Chiang, Peter Flubacher, Kimbro Frutiger, Mike Jacobs, Kristina Manis, David Pysh, project team; Wilmay Choy, Mark Faunlagui, Peter Flubacher, Jennifer Hanlin, James Hicks, presentation drawings and models*
Engineer: *Office of Structural Design*
General Contractor: *Silverstein & Associates Interiors*

PARLIAMENTARY BUDGET LIBRARY



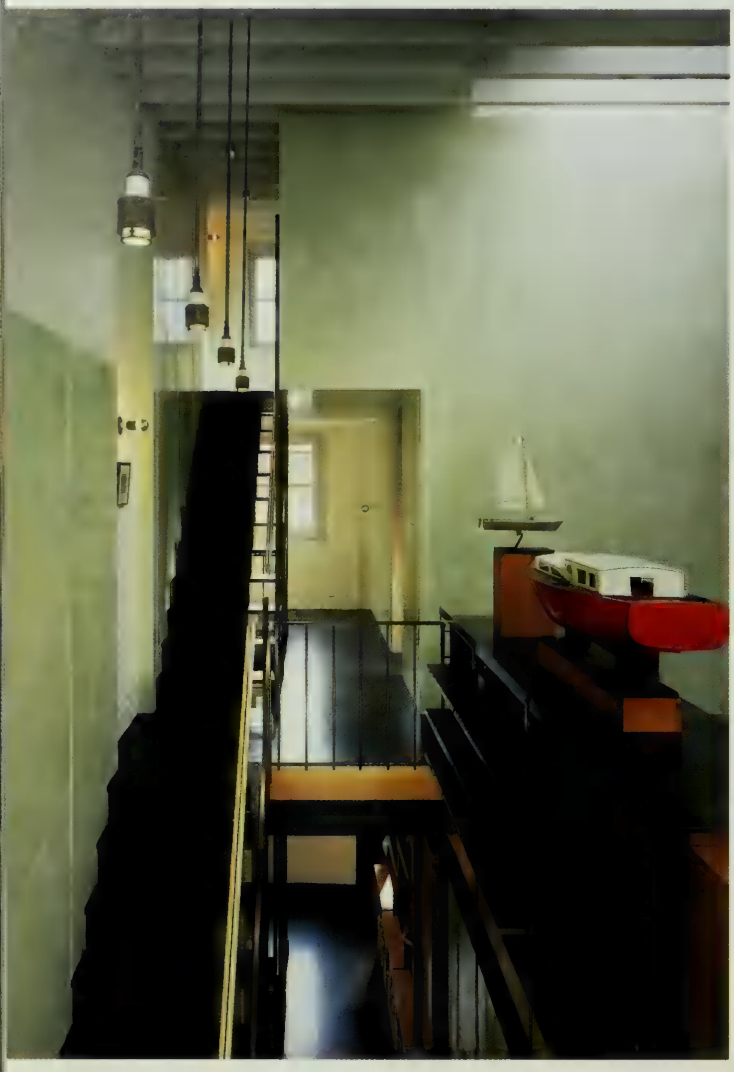
MODEL PHOTO: LESLIE GILL; DRAWING: JAMES HICKS, COURTESY THE ARCHITECTS



FLIP-UP AXONOMETRIC

The stair risers are partly punched out to allow views through to new windows, which reveal a previously unseen vista (site drawing, left). A steel-framed 6-by-26-foot opening was created between the ground and second floors. Within this opening, the three-foot module devised for the stair is reflected across the hall as a tubular armature for hanging artwork (opposite), which transforms at the upper level into a bookcase. Budget limitations kept the system from extending to the basement (drawing left and model below).





At the kitchen, the stairway system re-articulates itself as book storage and kitchen cabinets (right and opposite). Maple wood, matte framing members, and shiny bolts denote the system's hierarchy.



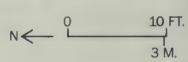
1. *Entry, stair*
2. *Garage*
3. *Kitchen*
4. *Dining*
5. *Guest*
6. *Living*
7. *Master bedroom*



SECOND FLOOR



FIRST FLOOR



level, stacking their bath over the master-bedroom bath. Green- and gray-tinted polished plaster selectively denotes enclosing volumes. They cut in 12 new windows and skylights and installed a metal grate over the areaway outside the dining room, so that a small outdoor space could be provided while allowing outside light down to basement windows.

Throughout bidding and into construction, the architects continued to refine the ideas of the design through models and analytical drawings, using what they had learned to deal with the inevitable site deviations. They reworked, for example, the transition between the existing ceiling at the kitchen and the exposed steel beam of the stairway system and its plywood infill. They credit the fastidiousness of the contractor's foreman, Cheng Hok Sing, who tended to the complex coordination issues the design presented.

Light entering from new windows at the rear draw the visitor's eye upward from the entrance. At the second-floor landing, the dark-tinted floor forms a kind of "horizon line," says Gill, anchoring a vista to the upper floor and outward onto a narrow alleyway, where it is extended beyond the tight confines of the site. It is in such subtle moves that Gill's landscape explorations paid off. The arched window in the living room also opens to a view of another narrow alleyway, a "landscape" Gill captured in an analytical site plan (see page 127). Drawing the eye outward in this way may seem a small thing when compared to the vast vistas of ordinary suburbia, but the results deeply impressed the clients, who had lived so long in a cramped, dark place.

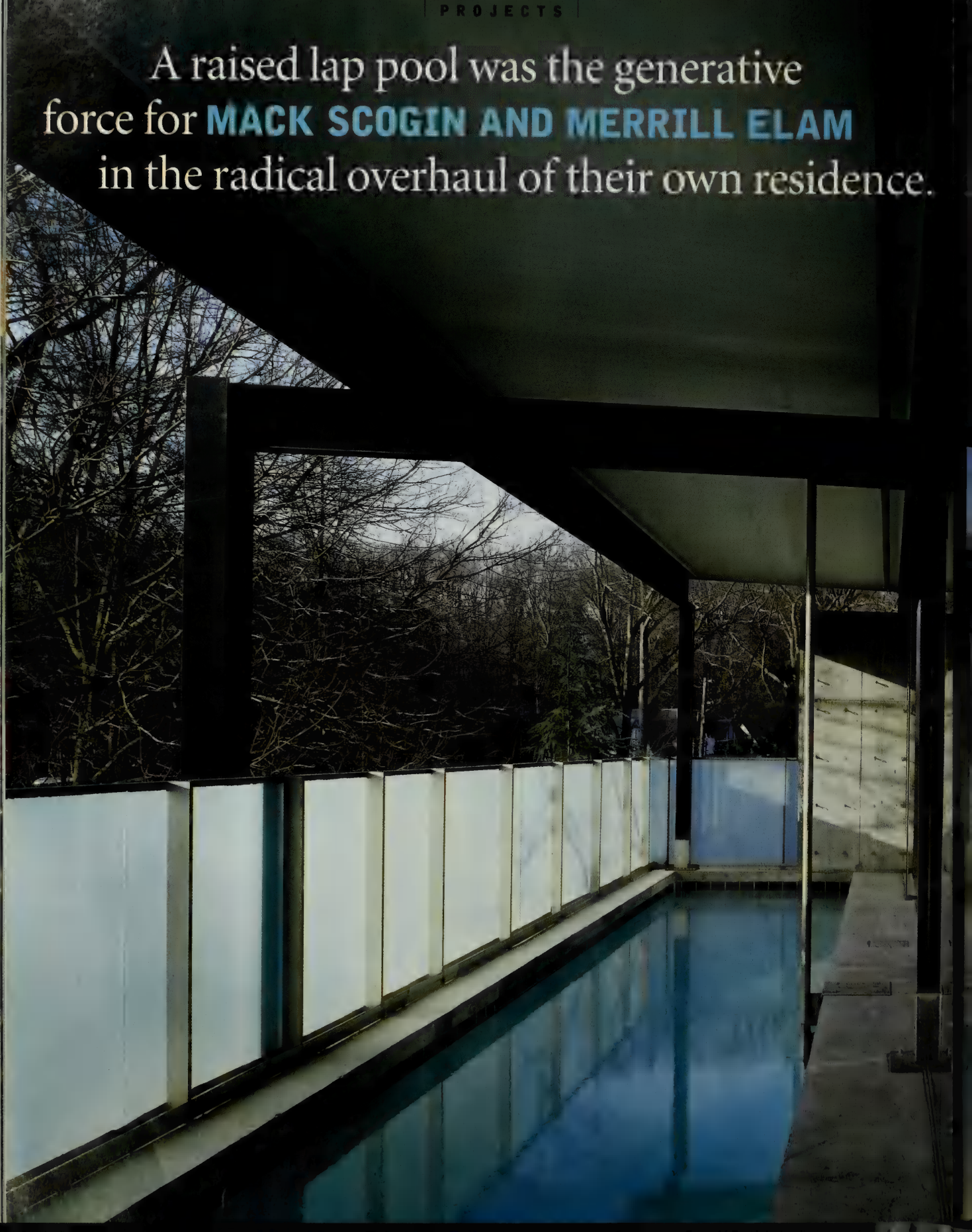
The unique aspect of the architects' approach was how their deeply held aesthetic beliefs drove the 3,300-square-foot project beyond the mere solving of admittedly difficult functional issues. In describing her process, Gill cites ideas of the sublime and the picturesque. Sanders talks of an organicism he calls "more fundamental than amorphic form and naturalistic appearance." While the architects' sources of inspiration may not be immediately apparent in the built design, their effect becomes palpable over time. "Listening to Leslie, I sometimes found the geometric ideas to be subcutaneous, not really visible," explains Watrous. "But the linearity really gets to me." ■

Sources

Custom cabinetry: *Sandor Ronai Cabinet Designs*
Custom plaster: *Stucco Lustro Veneziano*
Custom lighting: *Lucid Lighting*
Lighting: *Elliptipar, Flos, Fontana Arte*
Cast concrete: *Get Real Concrete*
Furniture: *Monique Savarese for Dialogica*

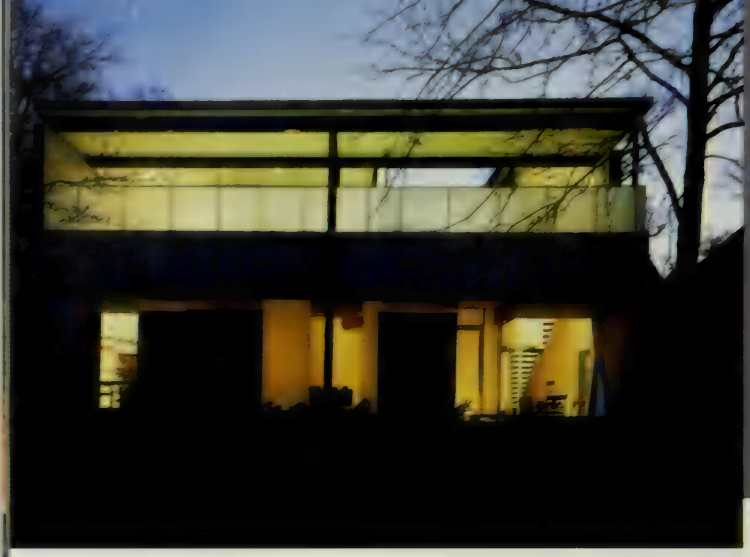

IMAGES OF MEXICO
MEXICO

A raised lap pool was the generative force for MACK SCOGIN AND MERRILL ELAM in the radical overhaul of their own residence.



PUBLIC LIBRARY





Elam hopes to plant a bamboo grove in the front yard to shield the 1,500-square-foot-house from the street (below). Laminated glass provides a hazy screen for the second-floor lap pool. At night the screen is animated by wavy patterns and mysterious reflections (left). A bridgelike library, unfinished for now, connects the main house with two guest pavilions in the back (section right).

by Karen D. Stein

"All eyes on the high board." The children's summertime call reverberates through the leafy streets of Brookwood Hills, a planned residential community dating from the 1920s, tucked between downtown Atlanta and the affluent Buckhead area. While Brookwood's community swimming pool and the perilous activity on the uppermost diving board draws its share of attention during the months of June, July, and August, it's the structure across the street—the new house of architects Mack Scogin and Merrill Elam, with its own daring water feature, a second-story lap pool wrapped in milky glass—that has all eyes on it year 'round.

Scogin and Elam have lived in the neighborhood since 1976, when they purchased a steep-roofed postwar bungalow, not for its architectural merits but for its modest price and desirable mid-urban, mid-suburban location. "Merrill hated the house," Scogin recalls. "So much so that the day we moved in she took a sledgehammer and knocked down walls between the tiny rooms." Elam adds, "I just started throwing stuff out the back window."

If the desire for a new architectural order was present from the moment the architects moved in, it took time, a gradual accumulation of financial resources, and surprising twists of fate to make their imagined changes real. For nearly 20 years, Scogin and Elam lived in their bungalow, completing only modest renovations—a streamlined interior plan and the addition of two small guest pavilions in the backyard.

FINDING A PLACE FOR THE POOL WAS NOT EASY, SO THE ARCHITECTS PUT IT UP IN THE AIR.

Three years ago nature stepped in. In October 1995 the gale-force winds of Hurricane Opal snapped a mature water oak planted at the sidewalk and it fell diagonally across Scogin and Elam's lot, landing on the couple's bed. Luckily they were both in their apartment in Cambridge, Massachusetts, where Scogin was completing his term as chairman of the Department of Architecture at Harvard University's Graduate School of Design. Twice before, trees had fallen on the house, swatting the roof, but this one fell *into* the house.

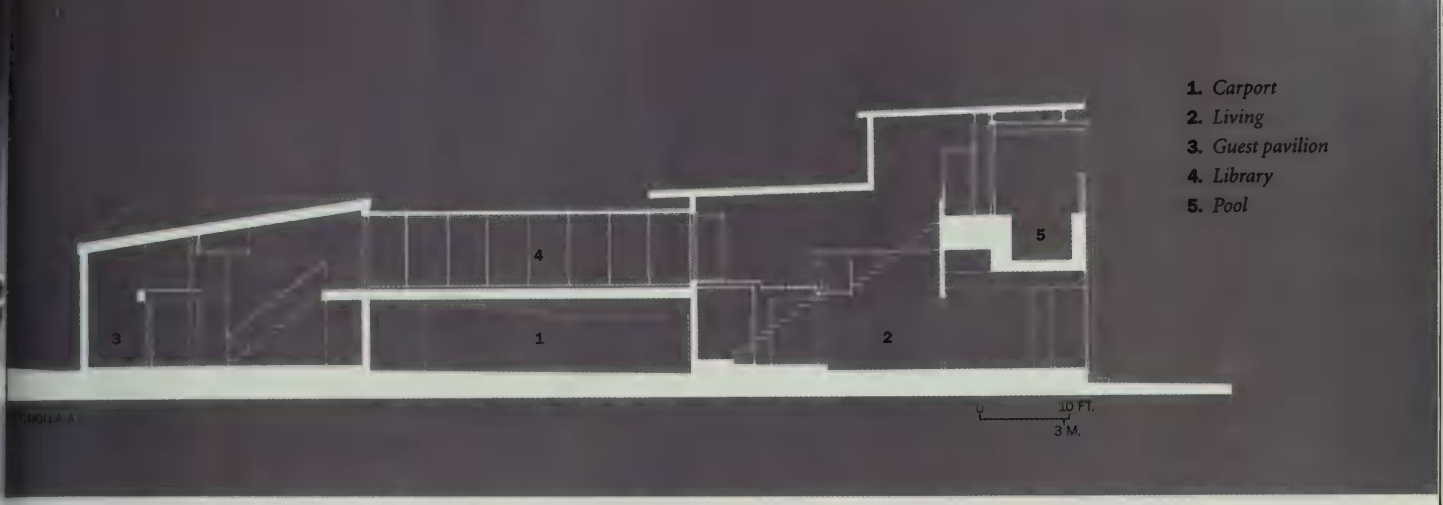
When the news reached the couple, they didn't rush home. "It's a bit of an embarrassment," explains Scogin of their delayed reaction. "We



lived in a modest house for years. We spent our time working on other people's houses, not our own. So we didn't have *things*." When they did finally return to Atlanta to salvage their belongings, there wasn't much left of their house. "This tree cracked all the walls and split the roof's ridge beam," recalls Elam. "If it had been a car you would have said it had been totaled." It took 15 men more than two days just to remove the tree.

At first, the architects camped out in what was left, pitching a tarpaulin in a tiny corner of the wobbling structure to keep out the rain. Like many who have suffered the loss of their home from natural causes, they planned to rebuild, re-creating the house pretty much as it had been. "We were going to save as much of the house as possible," remembers Scogin of their initial response. "We did demolition drawings for the contractors that said, 'save this, but not that.' Then we'd *(text continues)*

Project: *64 Wakefield Drive, Atlanta*
Architect: *Scogin Elam and Bray Architects—Mack Scogin, AIA, and Merrill Elam, AIA, with Lloyd Bray, AIA*
Engineer: *Palmer Engineering Company (structural)*
Consultants: *Edward L. Daugherty, Landscape Architect (landscape); Ramon Luminance Design (lighting); Aqua Blue Pools, Inc. (pool installation); Paul Wilson (metalwork)*
General Contractor: *John Wesley Hammer Construction Company*


1. Carport
2. Living
3. Guest pavilion
4. Library
5. Pool
1
2
3
4
5
0
10 FT.
3 M.



From left to right: Merrill Elam, Mack Scogin, and Lloyd Bray, principals of their own Atlanta-based firm since 1986, poolside at Elam and Scogin's house.

Party of three "Not at all," is how Lloyd Bray characterizes his involvement in the design of Mack Scogin and Merrill Elam's house. Elam's opinion differs—not in terms of workload, but attitude. "He provided tolerance," chuckles Elam of Bray's invisible role in the house, "as he does in all that we do." Explains Bray of the three-way partnership, "Mack and Merrill are the design spirit of the firm. I throw out design ideas. Most of them get laughed at, though every once in a while one will get incorporated into a project. I concentrate on business issues."

This happy collaboration has been going on since the late 1970s, when the trio worked together at a much larger Atlanta office, Heery and Heery Architects and Engineers. Scogin was the firm's president, chief operating officer, and director of design until 1984, when he left to form his own practice. Elam and Bray soon followed.

While Scogin and Elam oversee all design aspects, Bray keeps things running. His partners travel far and wide teaching, lecturing, and interviewing for new work. Scogin is a Harvard professor, so he spends two days a week in Cambridge for at least one semester a year. Elam has taught all over the country, including Los Angeles's SCI-Arc, Clemson University, and the University of Virginia. This year she's commuting to the University of Houston.

"Mack and Merrill work all the time. They wake up in the morning and they do architecture all day," reports a somewhat incredulous Bray. What about the pleasures of their new house? "Well, maybe now they wake up in the morning and take a quick swim. And then they do architecture all day." *K.D.S.*



1. *Carport*
2. *Living*
3. *Guest pavilion*
4. *Library*
5. *Pool*
6. *Master bedroom*
7. *Deck*
8. *Laundry/dressing*

PUBLIC LIBRARY



For now, Elam and Scogin's collection of architect-designed chairs is their principal furnishing.

Steel beams seem to be a dramatic expression of structure (above) but are in fact decorative. The 50-foot-long pool is supported by concrete outer walls. A piece of wood is suspended between the pool enclosure and the bedroom's built-in television cabinet (right).





PRINCETON PUBLIC LIBRARY

Furnishings in the house remain minimal for now. A blackboard from Scogin's former office at Harvard University's Graduate School of Design is preserved with sketches by director Robert Wilson (below), who lectured at the school.

come by and it would all be gone," says Elam. Apparently, the contractors didn't think much was worth saving.

Then Elam had an epiphany: "One day I said, 'I don't want a house, I just want a pool.'" No one was more surprised than Scogin, who says, "It was a total shock to hear Merrill ask for a lap pool. She never wanted anything. It became an obsession to get her that pool."

Finding a place to put it was not easy. The backyard, with the two pavilions and swath of grass, was not large enough, and putting the pool in the front yard was prohibited by local zoning. The result was to push the pool up in the air. "It was the generative moment," says Scogin of the decision to locate the lap pool on the second floor of a "plan that makes no sense." It is indicative of Scogin and Elam's architecture that "no sense" became common sense and that happenstance took on the air of inevitability as the scheme developed.

The outdoor pool, surrounded by a deck, is the culmination of Elam's quest. It crowns the two-floor master-bedroom suite, with dressing rooms and closets downstairs and a sleeping area, bathroom, and bathing above. "It's a vertical suite," jokes Elam. "It's a house that keeps you healthy by making you go up and down." Hoisting the pool required its own heavy lifting. The shell is cast-in-place concrete, which is one to two feet thick on its four sides, one foot deep, and supported by 12-foot-deep foundations at the load-bearing walls. Once the pool was designed, other living spaces were arranged around it.

"IT'S A VERTICAL SUITE," JOKES MERRILL ELAM OF THE TWO-FLOOR MASTER BEDROOM.

The architects, who moved into an apartment during construction, stopped by regularly to discuss design details with the contractors, working in a design-as-you-go process that they thoroughly enjoyed but would not use with clients. In fact, as their house was under





Wood-fibrous cement flooring panels were laid on top of the existing structure (above). The pool's shell has a purposely rough finish.

construction their firm, Scogin Elam and Bray Architects, was working on four other houses concurrently. [For the first completed project of the group, a house in Dillard, Georgia, see RECORD, April 1997, pages 90–97]. The firm's houses are as different as their clients, locations, uses, and budgets. But all are connected by the architects' unique expressionistic forms, which are as much about aesthetic appeal as about constantly playing against expectations—finding coherence in the seemingly absurd collage of spaces, and richness in the plainest of materials.

"The house is the great experiment in American architecture,"

THE OVERLAPPING SPACES ARE LESS A SERIES OF ROOMS THAN A CHOREOGRAPHY OF MOVEMENT.

says Scogin. But in their own house, the architects went a little further, melding horizontal and vertical spaces into a three-dimensional pinwheel. The overlapping spaces are not conceived as a series of planned rooms as much as a choreography of movement. "I told my mother there are no rooms, just situations," reports Scogin of the first parental visit. This deliberate ambiguity and open-endedness of "rooms" is increased by the reflections of the open-air pool against its shimmering glass partial-height walls. At night, the windswept pool water casts shadows on the translucent front, animating the facade with ripples. During the day, images of trees are projected onto the concrete walls around the pool, making the structure itself appear transparent. "I wake up every morning seeing through concrete," marvels Scogin of the panorama of trees, both real and reflected, that is visible from his bed. "The first thing I see every day is a miracle." ■

Sources

Oynx entrance stoop: *Artistic Stone Craft*
Aluminum windows: *Phoenix Metal and Southern Aluminum*
Glass and aluminum entry doors: *Amarlite*
Custom hardware: *Designed by Mack Scogin*
Cabinet hinges: *Grass America, Inc.*
Plastic laminate surfaces: *Wilsonart International*
Cementious flooring: *U.S. Architectural Products Inc. (Plycem)*
Pool floor, wall tile: *Quality Pool Tile*
Encapsulated halogen lamps in recessed sockets: *Abco*
Lighting controls: *Lutron*
Sofa: *B & B Italia, courtesy Domus/Atlanta (Charles Section sofa designed by Antonio Citterio)*
Oversized ottoman: *Flexform, courtesy Domus/Atlanta (designed by Antonio Citterio)*
Chaise: *Cassina LC-4 Lounge, courtesy Domus/Atlanta (designed by Le Corbusier)*



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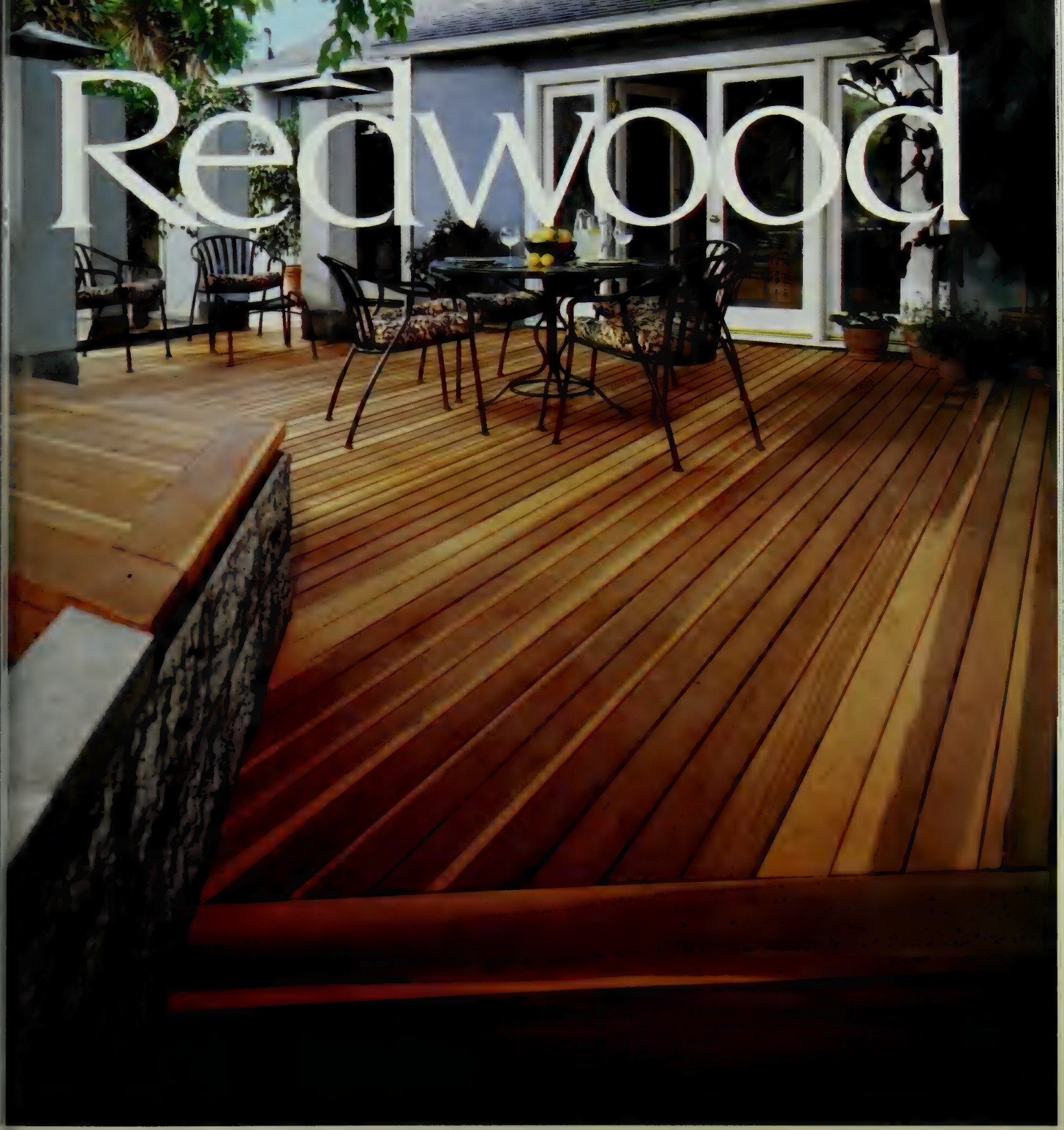
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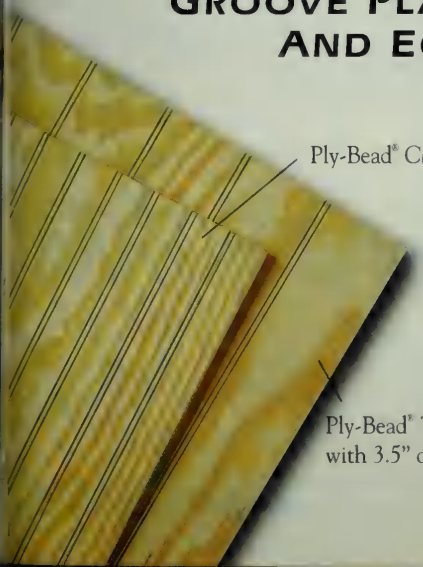
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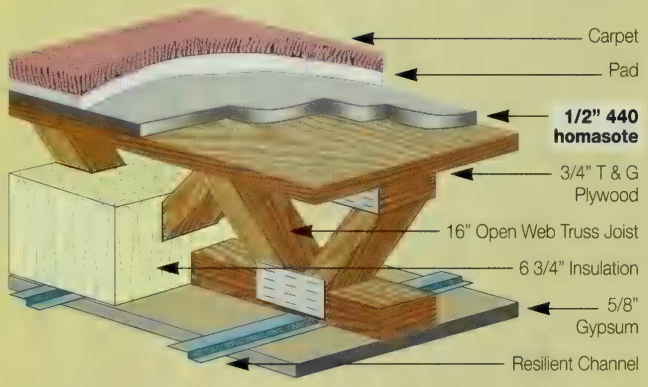
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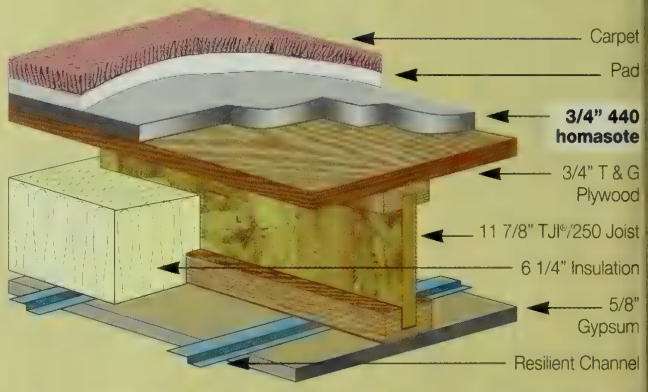
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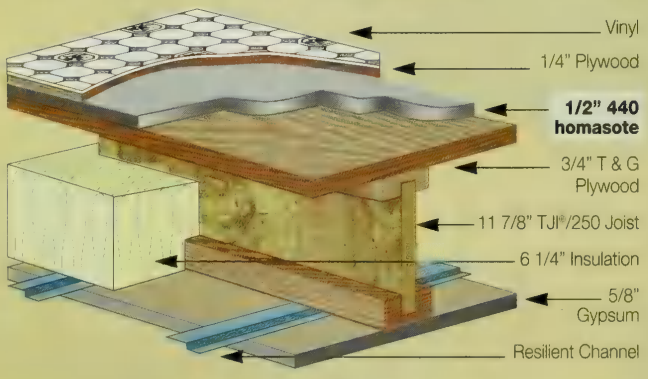
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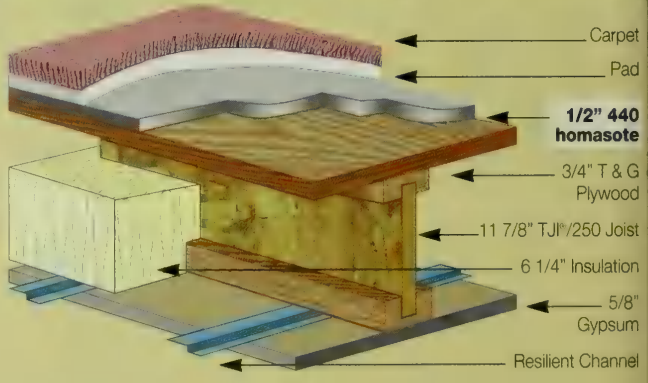
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The Nature of Green Architecture

NOW THAT ARCHITECTS ARE BEGINNING TO TAKE SUSTAINABLE DESIGN SERIOUSLY, HOW CAN THEY FIND THE HELP THEY NEED TO MAKE THEIR BUILDINGS SUCCESSFUL?

by Wendy Talarico

An architect in Denver, an expert on sustainable housing design, won't admit to being a "green" architect. "I don't want people to think of me that way," he says. "I don't want to work with clients who harvest their own wheat and freak out if you mention carpeting or plastic pipes."

Clearly there are architects who worry that by positioning themselves as green they will attract ecofanatics who desire back-country bomb shelters built out of bizarre materials and powered by wind turbines. But, says Rick Joy, an architect in Tucson who specializes in rammed-earth houses, "Green houses don't have to look like they were built by beavers. And you don't have to be a weirdo to live in one."

Green, or sustainable, design—the two terms are used interchangeably—may have implied an extreme approach to building 20 years ago. Now it simply means minimizing the ecological impact of a building. Most architects have always been concerned about the environment, but only in the last few years has the profession as a whole seriously taken up designing buildings with sustainable materials. Says Marvin Rosenman, chairman of the architecture department at Ball State University, the move toward sustainability is "happening, but slowly."

Among the signs of green design's acceptance are recent subdivisions across the country that are sympathetic to the environment—like Prairie Crossing in Central Lake County, Illinois, and Dewees Island near Charleston, South Carolina (see page 150). In addition, several prestigious design groups, including the Boston Society of Architects, have begun to offer awards for sustainable design, and many design competitions now require that green products be included.

Nationwide, about a dozen demonstration houses using experimental green technologies and materials are either under construction or have recently been completed. One of these, built in Atlanta by the Southface Energy Institute, was designed as an educational tool: It shows architects, builders, and code officials that environmentally sensitive houses can look "normal" and provides a forum for demonstrating new products and techniques.



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Perhaps most important, sustainability has become a serious subject in architecture schools. Educating Architects for a Sustainable Environment (EASE), a group of professors and administrators, is working with money from the federal government to devise a curriculum that combines architecture and environmentalism.

Much of the impetus for a greener education is coming from architecture students themselves. At the University of Arizona's School of Architecture, assistant professor Rocky Brittain is working with his classes to build a 1,000-square-foot classroom facility out of rammed earth. The students, he says, are learning firsthand the economic, thermal, and structural advantages of this material for desert construction. "I've been teaching this subject for 20 years and have watched interest grow. Now I would say there's some element of sustainability taught in just about every architecture school in this country," Brittain says.

What does "green" mean?

Sustainability is an amorphous subject that's filled with confusing terminology and conflicting information. Fiberglass insulation, for instance, is not "resource efficient" except when it's made with recycled glass or when it's the most effective way to cut energy consumption. At first glance structural insulated panels might not seem to be green because their cores are made of expanded polystyrene foam, a product that is energy-intensive in its manufacture. But because their energy performance is so

Continuing Education *Use the following learning objectives to focus your study as you read this month's ARCHITECTURAL RECORD/AIA Continuing Education article. Then complete the questions on page 188 and check your answers (page 190). AIA members may fill out the self-report form (page 190) and send it in for two AIA Learning Units. —Mark Scher, AIA Director Distance Learning*

Learning Objectives *After reading this article, you should be able to:*

1. *Cite an approach for evaluating green design and at least 12 criteria for selecting sustainable products, with attention to manufacturing and post-installation issues.*

2. *List at least four sources that provide information and education about sustainable design.*

3. *Describe the state of sustainable design in terms of major geographical influences, product selection, and the building associates who are key to project construction.*

GREEN COMMUNITIES MERGE SUSTAINABLE DESIGN WITH NEOTRADITIONAL IDEALS

There's no main street in Civano, a high-density suburban community under construction outside Tucson, Arizona. Instead, there's a main pathway. The development, planned by Community Design Associates, Duany Plater-Zyberk & Company, and Elizabeth Moule & Stefanos Polyzoides, will feature natural landscaping, homes sited to take advantage of passive-solar energy, a water-harvesting system that will irrigate the community garden, and an emphasis on photovoltaics.

When it's completed, Civano will have enough light industry to provide one job for every two households. No steel mills or nuclear-power plants will be built here, though, only environmentally sound manufacturing. The first firm to have reserved a spot in the community manufactures photovoltaic film.

On Dewees Island, a 1,200-acre patch of sand, trees, and swamp off the coast of South Carolina, developers John Knotts, Jr., and Burt Hill Kosar Rittelmann Associates are allowing only 137 homes targeted at high-income, environmentally sensitive clients. Trees must be moved, not cut, to make way for construction. Homes may not exceed 5,000 square feet, none are located on the oceanfront, and restrictive covenants guide homeowners toward sustainable products. Transportation around the island is limited to bicycles and golf carts, although there is no golf course.

Meanwhile, in Loudoun County, Virginia, Burt Hill Kosar Rittelmann is helping develop EcoVillage. This cohousing development addresses sustainability issues with very small houses supplemented by a community center where residents share meals and entertainment. The houses will be built using structural insulated panels with a core made of straw and skins made of oriented-strand board.

Organic farming will be a shared community effort, as it is at Prairie Crossing, 40 miles north of Chicago, which has a 450-acre garden at its center. Cottage industries will foster a sense of community in EcoVillage, which is about 40 miles west of the Washington, D.C., beltway. In case residents need a quick taste of the Capitol's bright lights, the development is within walking distance of a commuter rail line.

Neotraditionalism goes green

It's been said that it all started in 1981 with Village Homes, the nation's first environmentally sensitive, high-density community. Located in Davis, California, and developed by Michael Corbett, Village Homes broke new ground with a storm-water system using natural drainage swales instead of sewers, agricultural fields integrated into the community's fabric, and narrow streets designed to encourage foot and bicycle traffic.





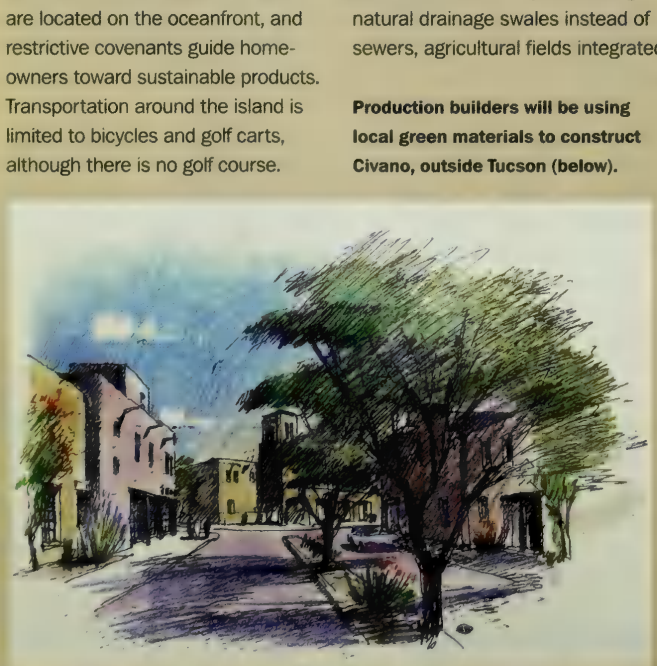
Prairie Crossing (top) and Dewees Island (above) merge Neotraditionalism with sustainable design.

But many planners say there's nothing new about these ideas. "This is the way it was done until the car came along and changed everything," says Harry Gordon, a principal at Burt Hill. "We're trying to get back to a system that worked better."

Neotraditional communities have not necessarily been green developments. But more and more, the two sensibilities are merging. That's partly because the former promotes pedestrian traffic, high-density cluster design, and site preservation. Furthermore, Civano, Dewees Island, and EcoVillage emphasize indigenous materials whenever possible.

Paul Weiner, an architect and builder in Tucson, is designing houses for Civano that are, he says, compatible with the desert landscape: nothing's taller than a cactus or more brightly colored than the sandstone. What's most remarkable about Civano is the involvement of production builders, who will make houses from local green materials, such as structural insulated panels, adobe, straw bale, concrete-foam building systems, and rammed earth. "This is a first step toward weaning builders off of traditional, wasteful materials," Weiner says.

As these communities progress, they help make green design more credible. The developers of Village Homes battled local officials for years to get their community approved. Now houses are selling for up to 25 percent more than in other Davis communities. And Civano's developers are in partnership with the city of Tucson and Fannie Mae. Weiner says, "That gives us credibility and gives them experience with environmental design." *W.T.*



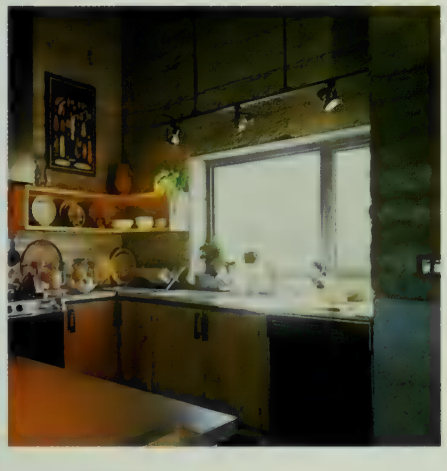
Production builders will be using local green materials to construct Civano, outside Tucson (below).





Straw-bale walls are topped by a timber roof structure (left) before being finished. Because the walls are typically 18 to 24 inches thick, deeply set windows (below) are necessary.





Views of a rammed-earth house (left) show the horizontal banding that occurs when layers of soil are placed in forms and pneumatically compacted. Only some types of soil are suitable for the process; also, rammed earth will not hold up in damp environments.



good, the panels are considered "environmentally responsible." One cannot always determine what is green by simple intuition.

Gail Lindsey, AIA, chairman of the AIA's Committee on the Environment, is working to bring quantitative measures to the subject and to make information about sustainability easier to understand and use. The committee has divided green design into five areas: site and land use (including transportation issues), energy efficiency, materials, indoor ecology, and waste reduction.

If there's one thing that proponents of green design have learned over the past few years, it's that you can't make a building sustainable by just plugging in a few green products. A designer must pay attention to each of the five categories and capitalize on the choices that benefit a given community most. In the northern United States, that may mean focusing design efforts on the heating system, whereas in the Southwest water conservation may be the top priority and in coastal regions site preservation may be most important.

Under the auspices of the U.S. Department of Energy, the AIA Committee on the Environment is participating in the Green Building Challenge, which culminates in a conference this October in Vancouver, British Columbia. For the past two years, as part of the challenge, architects from various countries have worked to develop a barometer for measuring a building's "greenness." The AIA group has developed a system of evaluating designs with a tally sheet that anyone—architect, builder, building owner—can use. The sheet gives points if a house is, say, within walking distance of mass transit or uses fluorescent lighting in each room. Energy efficiency is a priority: designs that conform to or exceed ASHRAE 90.1, an energy-conservation standard applicable to commercial and residential buildings, earn the highest number of points.

Because sustainability is, to some degree, region-specific, the AIA group's rating system is controversial. Some argue, for example, that extra points should be given for putting a building close to mass transit in areas where traffic congestion and air pollution are significant problems. Similarly, buildings that conserve water in localities where it is scarce should receive more points.

Affordability also matters, and sustainable design details should be equally applicable to low-cost housing and high-end, custom homes. Until recently, says Lindsey, being green was something of a luxury, reserved for homeowners who had enough money to buy triple-pane argon-filled glass windows or wool wall-to-wall carpeting. But with the growing availability of less expensive green materials, this is no longer true. Sustainable design is a balancing act, a matter of concentrating the architect's time and the client's resources on choices that will do the most good. "We've learned that a house doesn't have to be alternative or extreme to be green," Lindsey says. "If we can find a way to lessen the ecological impact of production houses, even tract houses, then we're getting somewhere."

Green products

A major problem for architects dealing with green materials is that there are suddenly so many of them. These days, it's good marketing for companies to call their products green, but there is no official standard of comparison. Architects must familiarize themselves with a plethora of green products and develop a way to judge the attributes of each. This can be time consuming. A team of architects designing an administrative





Concrete is mixed with recycled polystyrene foam to create precast panels (left and below). An alternative technology uses recycled wood for post-and-beam components.

building for the University of British Columbia were required to incorporate 50-percent-recycled materials, along with high-efficiency heating and cooling systems and water-conserving plumbing fixtures. The architects reported that it took them three times longer to come up with a green plan than it would have taken to design a conventional building. Because they were unfamiliar with green products, the architects had to educate themselves every step of the way.

Another issue for architects is that the value of some sustainable materials is readily apparent while that of others is less obvious. One can't really "see" that a product is saving energy or that it didn't create toxic waste during manufacturing, but carpeting made from recycled milk jugs lies on the floor in plain sight.

Lynn Simon, a San Francisco–based architect, works as a consultant to other architects, helping them become familiar with and select sustainable materials. She's found that once architects design one or two projects using green standards, the process becomes simpler. "It's like getting used to recycling your bottles, cans, and newspapers. Pretty soon it becomes automatic," she says.

Simon evaluates a green product with the following checklist: Is it locally produced? Is it from a sustainable or renewable resource? Is it reusable or salvageable if the house is disassembled later? Does it contain recycled products? Were toxic by-products created during the manufacturing process? How much energy is required to create the product? Is there any post-installation off-gassing? How easily maintained is the product? How long will it last? More obvious considerations include the material's availability (because they tend to be region-specific, many green products are not widely distributed), ease of installation, and cost.

"It's something of a science to track down much of this information and make sense of it," says Simon. "How many architects have time to go searching around? Also, everyone's a little shy about trying something new." She encourages clients to go green where it will have the greatest impact in a project when compared with conventional materials, typically on the largest surface areas: walls, insulation, and flooring. Simon also emphasizes energy-efficient products, since in most areas energy is generated by nonrenewable fuels and their by-products pollute the atmosphere and deplete the ozone layer.

Despite the trend toward the greening of architecture, standard building materials like steel, wood, and glass are not forbidden in a green house. Rick Joy turned to rammed earth because it is a historically correct building material, but he hasn't excluded other materials. Joy's houses are hybrids, combining adobe, earth, steel, and wood. "I'm not a rammed-earth guy, I've just added it to the palette," he says.

Bonding with builders

It's one thing to design a house that is sensitive to the environment and another to actually build it. For example, preserving trees on a building site might be a natural instinct for an architect, but finding an excavator who shares this sensibility could be difficult. In addition, craftsmanship is often lacking where new materials are employed. Finding tradesmen who understand structural insulated panels or the new concrete-foam building systems is nearly impossible, and looking for a subcontractor who knows how to install a ground-source heat pump may be an ordeal. An architect might go to great lengths to include resource-conserving products, while a building crew thinks nothing of tossing recyclable waste—like cardboard boxes, carpet scraps, and unused bricks—into the dumpster.

That's why it's a good idea to team up with a builder who has experience working with sustainable buildings at the beginning of the design process. A seasoned contractor, among other things, can help fight the battle for code approval, which is hard won when unusual materials are specified. While parts of Arizona, Washington, and California may be more progressive—straw bale and rammed earth are acceptable in Tucson, for instance—in most of the country, such innovations as gray-water systems or waterless urinals are out of the question.

ONCE AN ARCHITECT DESIGNS A FEW PROJECTS USING GREEN STANDARDS, THE PROCESS BECOMES SIMPLER. LIKE RECYCLING, IT BECOMES AUTOMATIC.

"Count on spending plenty of time at the buildings department, talking to inspectors about what you're working with," says Dennis Creech, executive director of Southface Energy Institute. "Don't wait until you get out in the field. I haven't seen a problem yet that couldn't be resolved with patience and education."

Architects must be cautious about alienating bankers as well. A straw-bale house may be wonderfully efficient, but it's just about impossible to get a loan to build one. The fact is, most loan officers don't want to put up money for anything that strays too far from conventional materials and construction methods.

There is a thin line between houses that are environmentally astute and those that are so green they're intimidating. The challenge is to incorporate as many green strategies and technologies as possible without increasing the cost and complexity of the project so much that it becomes impractical.

Resources

The following organizations offer books and CD-ROMs on green materials: Southface Energy Institute, Atlanta, 404/872-3549; the Center for Resourceful Building Technology, Missoula, Montana, 406/549-7678; and the Rocky Mountain Institute in Snowmass, Colorado, 970/927-3851. Another good resource is the *Environmental Building News Product Catalog*, which contains literature from the manufacturers and independent analyses by the editors of *Environmental Building News*, a newsletter about green building (802/257-7300). ■

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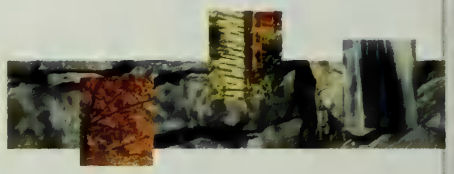
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CIRCLE 52 ON INQUIRY CARD

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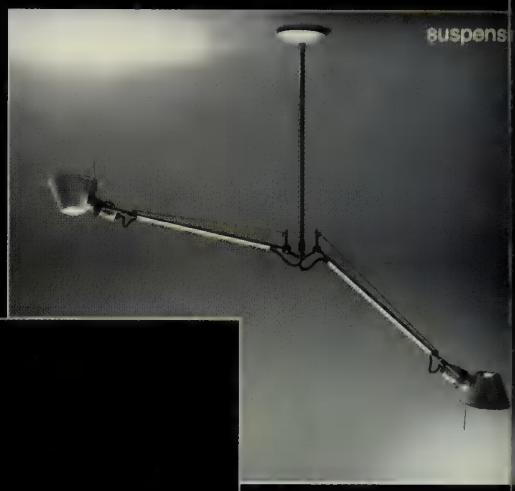
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CIRCLE 53 ON INQUIRY CARD

Tolomeo

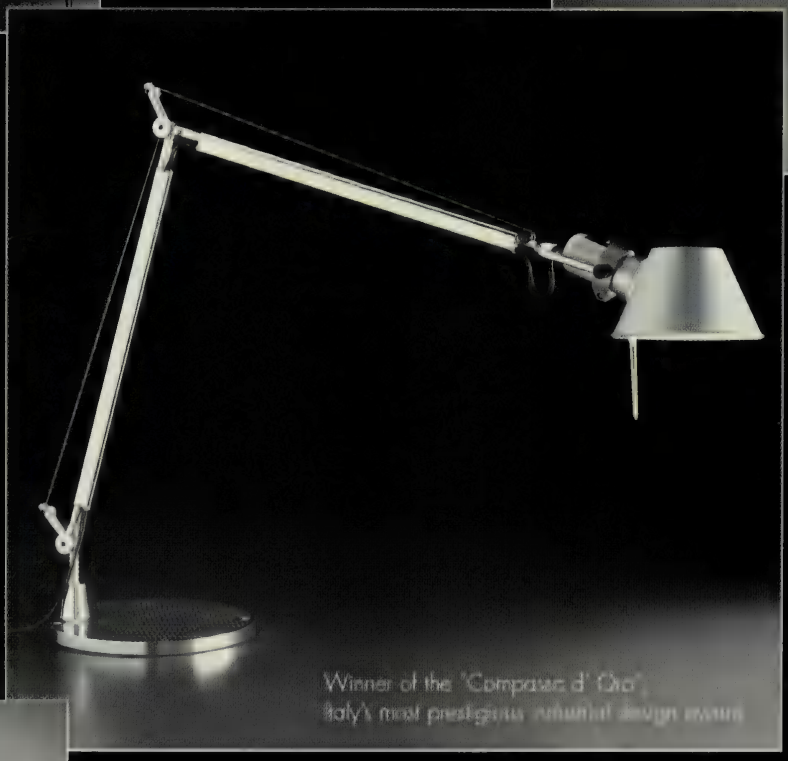


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CIRCLE 8 ON INQUIRY CARD

NEW PRODUCTS

SPANISH TILES: A LONG-HELD TRADITION FINDS A HOME IN THE FUTURE

Europe has one of the strongest and oldest ceramic tile traditions in the world, while the United States is just beginning to understand the material's uses and benefits as a floor and wall covering. Spain is lending the U.S. a hand with a healthy export business: according to the U.S. Department of Commerce, this country imported 175 million square feet of ceramic tile from Spain in 1996, up from 88 million in 1991. In addition, there are currently more than 80 Spanish manufacturers that distribute ceramic tile in the United States and 23 companies with permanent offices here. Most of the production remains concentrated in Spain's Castellón province and the majority of tiles are sent to distributors in Florida, Texas, California, and New York.

Recently, the Home of the Future, built as a demonstration house for the National Home Builders Show in Dallas by architect Barry Berkus, featured more than 4,000 square feet of tile contributed by 12 of Spain's manufacturers. To complement the house's building innovations and its future-oriented look, the architect decided to include traditional materials. Drawing on the continuing rise in popularity of ceramics, Tile of Spain, the organization that promotes Spain's industry in the United States, became the exclusive provider of ceramic tile for the house. Here is a sampling of the tiles included in the Home of the Future.

The great room

Azuvi's 18-inch-square stone-look tile in beige, called Creta, covers most of the home's downstairs (top right). The tile's rustic, warm shades unify the great room and the family bath (bottom right), as well as the foyer, media and morning rooms, kitchen, and pantry. 800/886-3570. Azuvi, Jacksonville, Fla. **CIRCLE 200**

Courtyard

The Compactto Pedra series of porcelain tiles from Pamesa lends a rustic feel to the home's courtyard while providing the strongest possible surface for the outdoor space (middle right). A mix of Baviera Negro (charcoal) and Baviera Marengo (gray) in three sizes (six-inch-square, six by 12 inches, and 12-inch-square) paves the way between the tiled foyer and the brick exterior. 305/446-4387. Available through Tile of Spain, Miami. **CIRCLE 201**

Master bath

Ceramic tiles from Gres de Valls provide a soft, warm, and calming atmosphere in the elegant master bath and spa (below). The tile conforms to the room's irregular shape to create a dramatic, unusual look. On the walls are examples of the company's 12-by-16-inch Shegel Blanco tiles, which are vertically set. The curved spa area features six-inch-square Shegel Blanco combined randomly with gray- and peach-toned six-inch-square Gotica decorative tiles. 305/593-6803. Gres de Valls is available at EPC, Miami. **CIRCLE 202**



In keeping with the project pages of this issue, this month's product pages center around the residential, from handmade ceramic tiles and high-style lavatories to solar roofing panels and reclaimed timber. The New Products pages highlight ceramic tiles from companies in Spain, England, and the United States, especially those in the Home of the Future at the National Home Builders Show. The Product Briefs pages include innovative environmental building materials, new design enhancements for living spaces, and the latest offerings for the kitchen and bath. ***—Elana Frankel, New Products Editor***

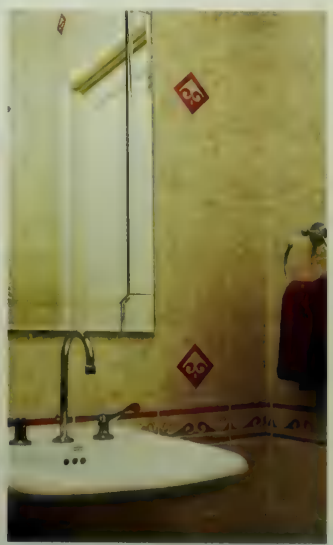


Guest suite bath

The floor and walls are covered in an earth-toned, marble-look-alike ceramic tile from Grespania (below). Called Barcelona, the large-format 12-by-24-inch tiles are set square on the walls and used in the same color as the Corts 12-inch-square tile set diagonally on the floor. On the walls, a stronger shade of Barcelona anchors the design below a 5½-by-12-inch Ramblas border of green and terra-cotta floral garlands set at half height. 516/736-0770. Grespania, Farmingville, N.Y. **CIRCLE 203**







LA BELLE CUISINE TILES: THE FINE ART OF NOVELTY IN THE KITCHEN

Although ceramic tiles are now being used in innovative applications, they are also still being specified in traditional ways—for kitchens and baths—and in traditional patterns. Countertops, floors, backsplashes, and shower installations are a natural fit for ceramic tile, as are floral patterns and animal motifs (though the latter are often considered a novelty item).

Original Style, a British company, is one manufacturer that continues to work in traditional styles, producing individually decorated, hand-painted, relief-molded tile. Although the United Kingdom is not among the top ceramic tile producers, it has a small but steadfast industry whose products are readily available through independent distributors in the United States.

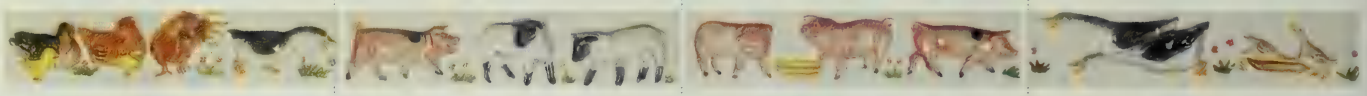
Original Style's ceramic artists, based in Exeter, England, handcrafted the wall plaques (the central tiles, which measure 12 inches square), 4-inch-square field tiles, and borders (which measure 8 by 2 inches) shown here with the ever-popular La Belle Cuisine collection of tiles with fruit, flowers, shellfish, and farm animal motifs.



Because some of the tiles have a copper-based laurel glaze that is prone to discoloration by mild acids found in some soaps (lemon-scented, for example), they are not recommended for kitchen sink areas. Check with your local distributor. Phone 011/441/392-474022. Fax 800/273-0636. Original Style, Devon, England. **CIRCLE 204**







GLASS, RELIEF, AND GLAZED: THE LATEST IN TEXTURED TILES

Portland, Oregon–based Ann Sacks Tile and Stone debuted its latest tile products at the National Home Builders Show in January. Here's a quick look at the company's latest offerings.

Made in the United States by European artisans, the Historic Tile collection (below right) is a reproduction of a honey-and-rust-textured brick tile dating from the 19th century. The tile is shown here with a collection of Virginian cabinetry from Canac Kitchens Limited for an English cottage look.

Inspired by lush garden design and sprawling landscapes, the company's Topiary series (below left) uses a hand-glazing technique to produce a rustic stoneware finish. (It is also available in an elegant creamy white or crackle.) The tile is shown here with Madison Avenue cabinetry from Canac Kitchens Limited and a Provence faucet and Cardamom sink from the Kohler Company.





Also available are the company's Porto Fino collection, an octagon and dot design that was originally presented at the Home Builders Show in the trendy colors of candle white and dark cobalt; Chateau Rideau, the company's first fruit series; Pavimenti Allende, a checkerboard mosaic pattern that is available in such colors and designs as Versace, Giallo Brulee, Coral, and Cashmere; Antiqued Stone, a Crema Marfil natural tumbled marble look; Caracol, a metal tile that is handcrafted from a combination of steel, stainless steel, aluminum, brass, copper, and bronze with a patina pattern; and Glashaus, a tile that has a slightly worn and handcrafted look.

Another recent addition to the Ann Sacks palette is a series of authentic Arts & Crafts glazes for the company's tiles, including soft and muted shades of saffron and verdigris. 503/281-7751. Ann Sacks Tile and Stone, Portland, Oreg. **CIRCLE 205**

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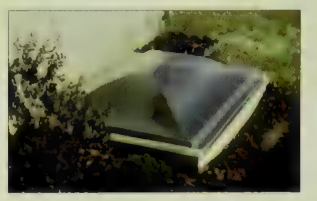
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CIRCLE 67 ON INQUIRY CARD

PRODUCTBRIEFS



▲ Portable campfire

Sing songs anywhere at anytime around Heat-n-Glo's Patio CampFyre. The seven ceramic fiber logs, surrounded by very realistic-looking river rock, give off a flame with 60,000 BTU. The movable unit comes standard with a protective cover and can be ordered for natural or LP gas. Some LP tanks may require an adapter for hookup. 612/890-8367. Heat-n-Glo Fireplaces, Minneapolis. **CIRCLE 206**

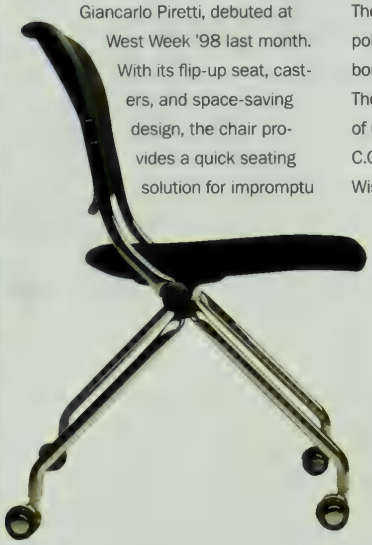
▼ Furniture fabrication

After graduating from the University of California at Berkeley's architecture program, Matthew Bear and Scott Moulton formed Union Furniture, a design firm based on the Modernist idea of functional yet visually minimal furniture. One example, the Proun Desk (below), measures 32 inches wide, 64 inches long, and 29 inches high and has a solid elm frame, solid oak cases, and a frosted-glass top. The doors are made from colorlith—a cast sheet of fiber with reinforced concrete that is traditionally used in laboratory settings. The openings are large enough for binders and files; custom configurations are also available. 510/652-0602. Union Furniture, Emeryville, Calif. **CIRCLE 209**



▼ Spontaneous seating

The Torsion chair from KI, designed by Giancarlo Piretti, debuted at West Week '98 last month. With its flip-up seat, casters, and space-saving design, the chair provides a quick seating solution for impromptu or informal office chats, team meetings, or the occasional unexpected visitor. The seats and backs are available in six polypropylene colors: black, blue-gray, bordeaux, juniper, sand, and warm gray. They can also be specified in a selection of upholstery fabrics from KI, Pallas, and C.O.M. 800/424-2432. KI, Green Bay, Wis. **CIRCLE 207**







▲ Commissioning glass art

Glass artist Ellen Mandelbaum recently won the AIA award for religious art and architecture for the 10 stained-glass windows and window wall she created for the entryway of the Adath Jeshurun Synagogue in Minnetonka, Minnesota. Among her other notable commissions are custom work for the Greater Baltimore Medical Center, for Boston architects Finegold & Alexander, and a painted glass door for New York architects Christopher Scholz and Ines Elksop. Her technique is leaded hand-blown stained glass enhanced by glass painting kiln-fired at 1,200 degrees. An exhibition of the artist's commissioned work will be on view at the Queens College Art Center in New York from April 30 to July 13. 718/361-8154. Ellen Mandelbaum, Long Island City, N.Y. **CIRCLE 210**

▼ Decorative security gates

Made of forged galvanized steel, the window guards from Ferra Designs measure six feet high and three feet wide with riveted connections. Railings measure a total of 40 linear feet. 718/852-8629. Ferra Designs, Brooklyn, N.Y. **CIRCLE 211**





▲ Raised panel systems

Ready-to-finish raised wood wall panel systems from New England Classic interiors are made from medium-density fiberboard—which is both temperature- and moisture-resistant—and covered with a choice of oak, maple, or paint-ready veneer. The standard available heights are 32 and 36 inches, and widths are six, nine, and 12 inches. Special sizes are also available for wainscoting, as well as partial- or full-wall coverage. The product is backed by a five-year limited warranty. 888/460-6324. New England Classic Interiors, Inc. Portland, Me. **CIRCLE 2[illegible]**

▼ Behind closed doors

The late, great fashion designer Gianni Versace spared no expense with his luxurious home in South Beach, Miami. So it comes as no surprise that he commissioned the designers at McMow Art Glass to create the stained-glass windows in the mansion's living and dining areas. 888/701-3494. McMow Art Glass, Lake Worth, Fla. **CIRCLE 212**



PRODUCTBRIEFS



◄ Custom pedestal sink

Diamond Spas' triangular lavatory is a bold new design constructed of 304, 16-gauge stainless steel. The sink consists of a hand-crafted geometric shape, with a hand-welded seam and a hand-buffed finish that is not stamped or molded. The sink is available in three sizes: 20 by 26 inches, 22 by 28 inches, and 24 by 30 inches. All are available with a sink depth of six or eight inches and a pedestal height of 32 or 34 inches. 800/951-SPAS. Diamond Spas, Broomfield, Colo. **CIRCLE 213**



▲ Long live Italian design!

Viva, a sleek and efficient Snaidero kitchen design created in collaboration with automobile designer Paolo Pininfarina (think Ferrari, Alfa Romeo, and Bentley), has a '60s retro color palette that includes Vanilla, Malaga Orange, Mint Green, Night Blue, Grecian Blue, Rope White, and Smelting Gray. Other features include smoked glass doors, sloping cabinets, and a set of exclusively designed tables, chairs, and stools. 310/516-8499. Snaidero, Los Angeles. **CIRCLE 214**

► Artistic license

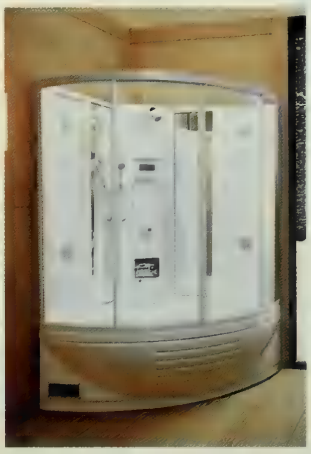
To help usher in Kohler's 125th anniversary, the company has extended its Pheasant Artist Editions pattern to include the Revival two-piece toilet, which completes the bathroom suite. Vibrant, a new polished-brass finish that is corrosion-, tarnish-, and scratch-resistant, is currently available on all Revival faucets. 800/4-KOHLER. Kohler, Kohler, Wis. **CIRCLE 215**



▼ A cook's true pleasure

GE's answer to the latest cooking craze is a series of stainless-steel over-the-counter combination microwave and convection cookers, called the Profile Performance. The Spacemaker XL 1400 (below) offers a customizable 20-second audio message for brief cooking reminders. 800/624-5443. General Electric, Louisville, Ky. **CIRCLE 216**





▲ Ultimate luxury

What could be more fabulous than Jacuzzi's J-Allure? The unit combines a whirlpool bath (with body and lumbar jets for lower-back massage), a shower (with two multifunction showerheads), 12 vertical body sprays, a steam bath built for two, and a built-in stereo/CD system with four speakers. And just in case that's not enough, a television/VCR monitor is also available. The unit measures 52 by 52 by 94 inches. 800/288-4002. Jacuzzi, Walnut Creek, Calif. **CIRCLE 218**

▼ Elegant and polished finish

Kroin has added to their collection of sanitary fittings three hand-polished stainless-steel washbasins. The polished basin shown here is 18 inches in diameter and finished inside and out with a Kroin sanitary fitting model HV3 lavatory faucet. The new series also includes round basins with polished or satin finishes on the inside, or inside and out. Also shown are Kroin's new angled shut-off valves. The collection has won numerous awards, including the Danish Classic Industrial Design Award, for products that have remained in production, unchanged, for 25 years. 800/OK-KROIN. Kroin, Cambridge, Mass. **CIRCLE 217**

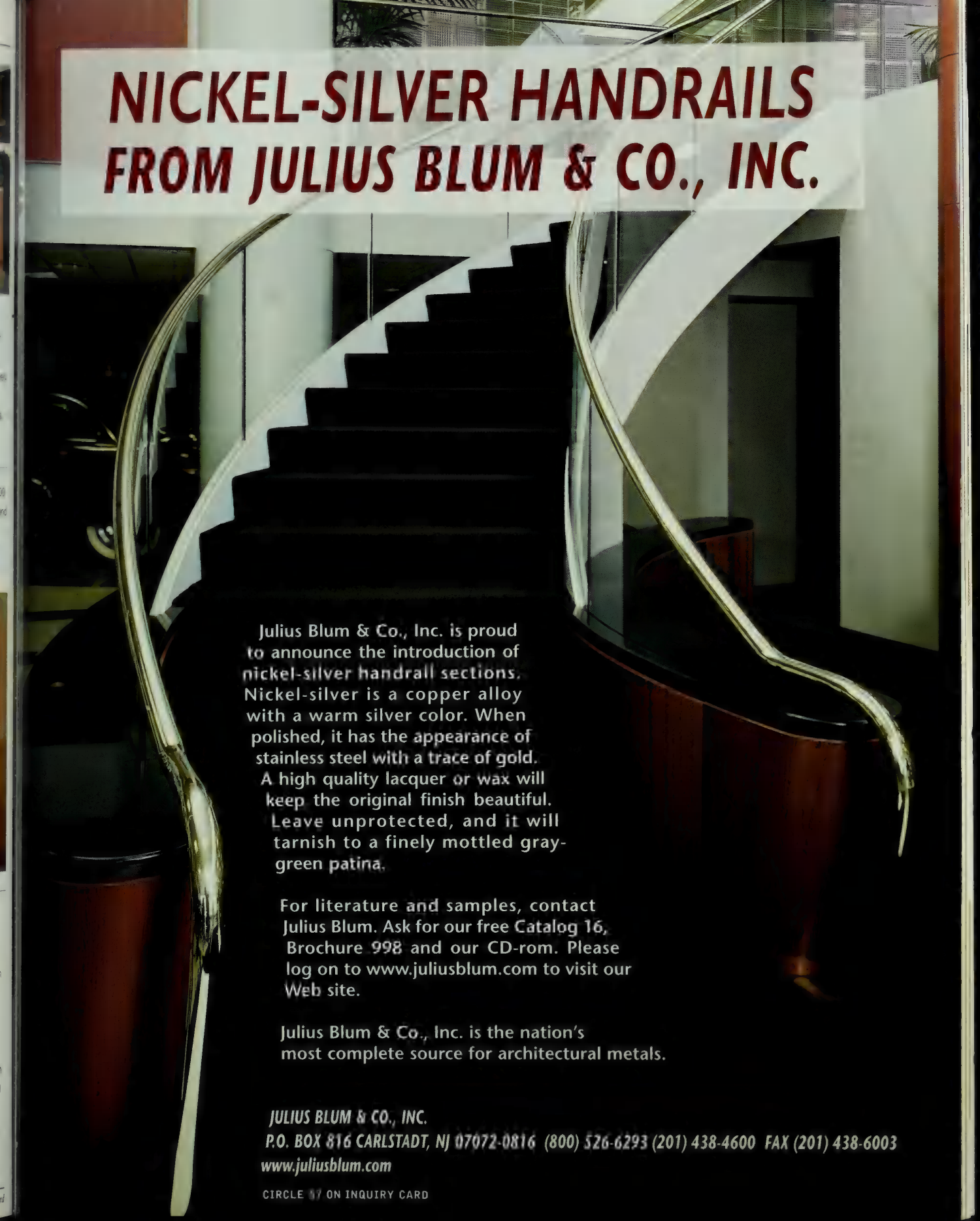


► Flower power

In response to the skyrocketing consumer demand for classic-looking commercial faucets, Chicago Faucet has made its products available through both commercial and residential sales channels. The residential product lines (which include Architectural, Renaissance, and Legacy) have been combined with the commercial products to form the Chicago Kitchen and the Chicago Bath collections. The exposed sunflower shower and tub filler with porcelain lever handles (left), one example from the Chicago Bath collection, is certified to the Underwriter Laboratory's ANSI NSF 61, section 9 standard and is stamped to signify certification. 847/803-5000. Chicago Faucets, Des Plaines, Ill. **CIRCLE 219**



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PRODUCTBRIEFS

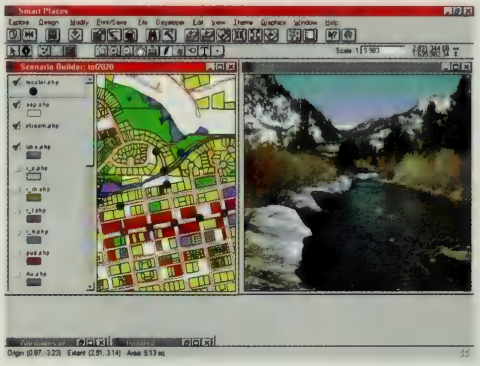


▲ The great outdoors

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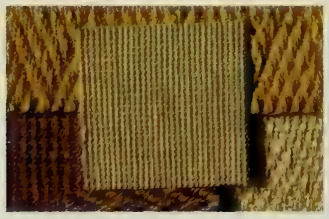
▼ Strategic decisions

Smart Places PC-based software evaluates the implications and opportunities of both rural and urban planning alternatives. Applications span diverse geographic strategies, including business target marketing, economic development, land-use planning, transportation systems, facilities management, environmental remediation and protection, energy forecasting, water allocation, and resource control. 650/855-2720. Electric Power Research Institute, Palo Alto, Calif. **CIRCLE 220**



▼ Nature underfoot

The Natural Design collection from E.C.O. of New York is a group of sisal, wool-blended, and coir carpeting. 800/238-5008. E.C.O. of New York, Bronx, N.Y. **CIRCLE 222**





▲ Salvaging timber

West Coast Lumber Inspection Bureau (WCLIB) records show that a gross amount of 2.6 trillion linear feet of timber has been sawn from 1904 to 1996. The G. R. Plume Company does its part to preserve this obvious and most valued resource by specializing in custom architectural timber fabricated from reclaimed Douglas fir. Rescued from turn-of-the-century structures such as railroads and barns that have been scheduled for demolition, the timbers are cleaned (and all metals extracted), resawn, and graded on-site by the WCLIB. Each timber is hand-selected and milled according to project specifications. 360/384-2800. G. R. Plume, Ferndale, Wash. **CIRCLE 225**

▼ Solar shingles

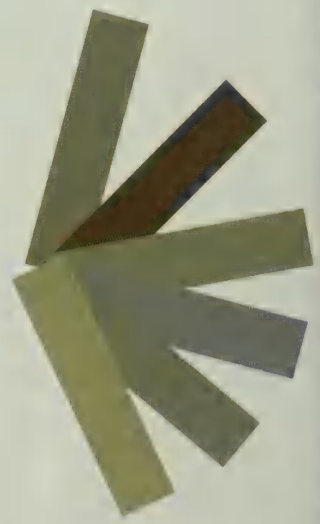
Atlantis Energy's SunSlates are solar electric roofing tiles with photovoltaic cells that convert solar energy into household current. The tiles are fit to conventional roof layouts and can be applied like standard roofing tiles—with galvanized nails and battens. Wire connectors link adjacent shingles. Unlike the bulky and unsightly solar tiles of the 1970s, SunSlates look like roofing shingles and blend in seamlessly. 916/346-9595. Atlantis Energy, Colfax, Calif. **CIRCLE 224**





▲ One-stop green shopping

Environmental Building Supplies carries products that are natural, renewable, of low toxicity, and entirely or partially recycled. Their inventory includes floor coverings, finishes, building products, and housewares. Shown above are Forbo's Marmoleum linoleum tiles; recycled glass tiles from AMDEC; remilled fir flooring; natural cork; wool carpeting; carpeting made from recycled soda bottles; AFM's Safecoat, a solvent-free, low-VOC latex paint; and Terra Green's Traffic Tile, which is 70 percent recycled windshield glass. 503/222-3881. Environmental Supplies, Portland, Oreg. **CIRCLE 223**



▲ Recycled paint

The e coat recycled paint products division of the Kelly-Moore Paint Company collects excess latex paint from household hazardous waste collections and surplus commercial and industrial customers. The collected paint is sorted, tested, and recycled into a 100-percent post-consumer paint product—a flat acrylic house paint for exterior surfaces such as wood, concrete, and stucco. 800/874-4436. Kelly-Moore Paint Company, Sacramento, Calif. **CIRCLE 226**



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PRODUCT LITERATURE

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CD-ROM for brick walls
Available June 1, Boral Vision for Architects is a specialized CD-ROM to help design drawings of brick-wall details, which can be transferred to CAD programs. 800/754-9090. Boral Bricks, Atlanta, Ga. CIRCLE 228

Food-service plumbing
Fisher's 108-page specialties catalog for the food-service plumbing industry is now available. 800/421-6162. Fisher, Tulare, Calif. CIRCLE 229

Southern pine buyer's guide
A state-by-state listing of Southern pine products and services from members of the Southern Forest Products Association (SFPA) is assembled in this annual directory, which lists mill capacities, production details, and sales contacts. 504/443-4464. SFPA, Kenner, La. CIRCLE 230

Environmental product catalog
What's Working, a green building consulting firm in Brattleboro, Vermont, has teamed up with the editors at the monthly newsletter *Environmental Building News* to produce the Environmental Building News Product Catalog. A must for architects interested in alternative building products. 800/861-0954. Environmental Building News, Brattleboro, Vt. CIRCLE 231

Rolling doors
New options in finishes, especially powder-coated colors, and closing and control systems for fire doors are highlighted in Cornell Iron Works' 24-page catalog. 800/233-8366. Cornell Iron Works, Mountaintop, Pa. CIRCLE 232

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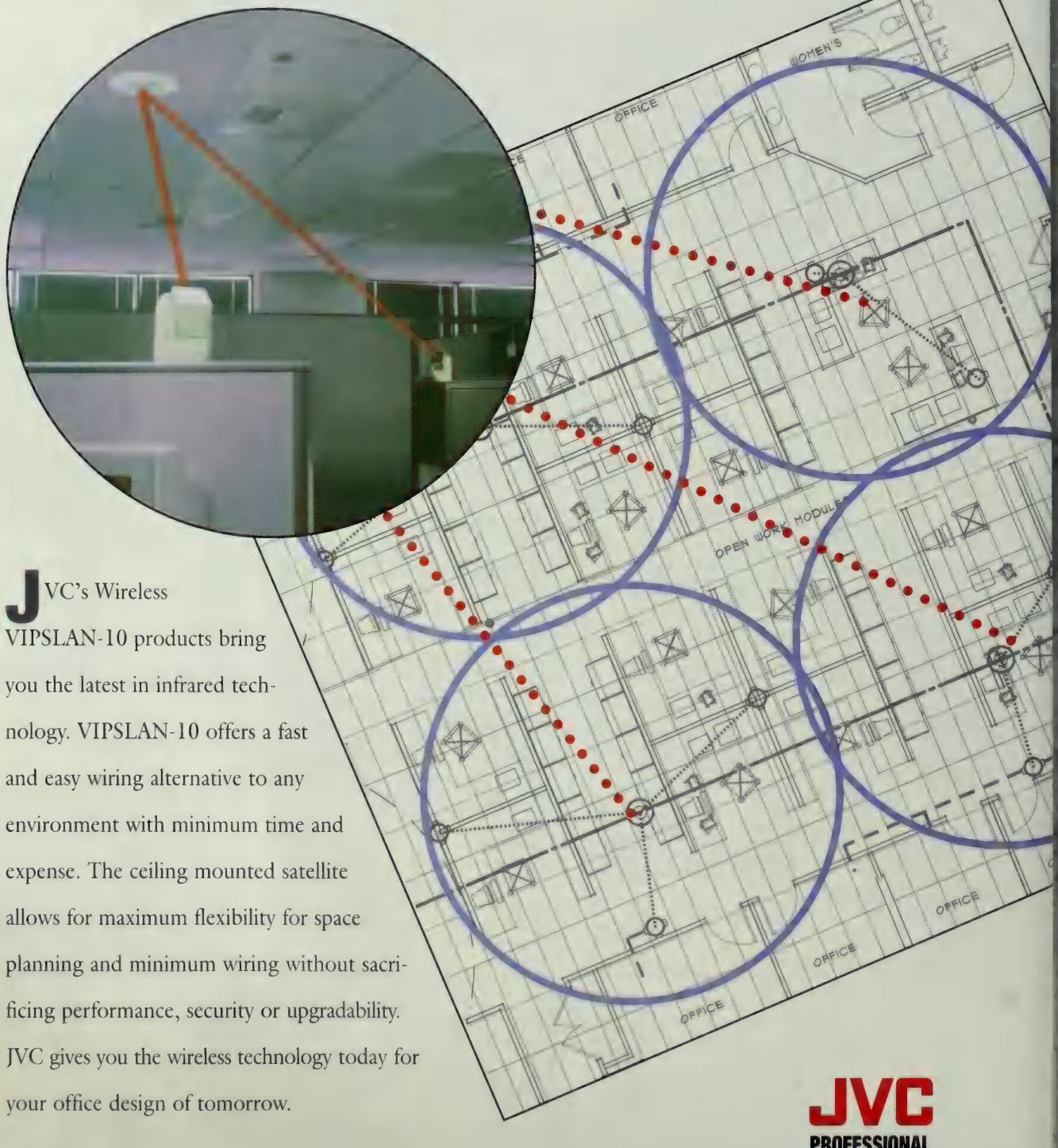
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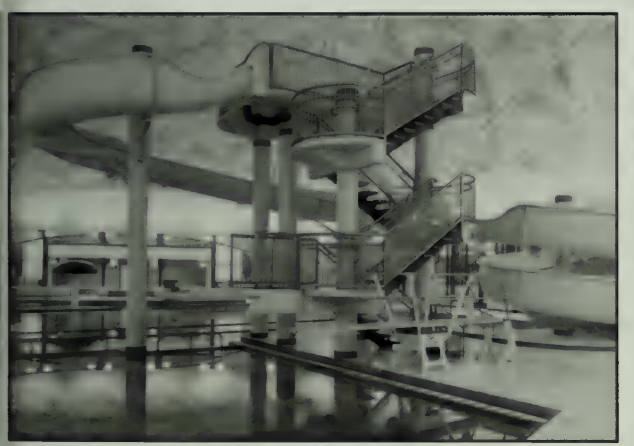
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"LICENSING HAS A VERY STRONG EFFECT ON THE WAY AN ARCHITECT PERFORMS HIS CRAFT." ***—Michael Gabellini***

teaches architecture at Yale and has had a full-time interiors person on staff at his firm for seven years. "Clients have enormous emotional needs that we have to involve ourselves with," said Carlson, who has designed houses for several celebrities in California. "We become part of our clients' lives. We tend to be more involved with clients, down to the drawers in their night table. It's difficult to keep a distance because you are dealing with family, children, the most personal parts of people's lives."

One fairly recent phenomenon affecting the relationship of architects and designers is the use of consultants on both corporate and residential projects. "Now on a big project, there will probably be 10 or 12 consultants, most of whom are controlled by project-management consultants, who have far more input from the financial side, in terms of what our clients spend, so they are really a dominating factor," said Walsh. "They can be good, or they can be bad, and they can make our life miserable. You end up serving two masters: your client and the project consultant, who is looking only at the bottom line."

The residential interior designers say that hiring consultants is almost inevitable. "They are necessary evils whom we have to learn to work with—and control better," said Saladino, "because there's no way to keep up with the technology in lighting or audiovisual equipment." For example, for one client's 8,000-square-foot apartment, Saladino hired outside consultants for security, acoustics, air-conditioning, structural engineering, and exhaust venting. The danger, Saladino and Carlson pointed out, is that the consultant tries to get between the interior designer and the client. "A lot of consultants whom we need will try to get rid of you," said Saladino. "Clients think consultants know more than they actually do. So I have to be the keeper of the lock."

A matter of taste

The definition of taste, good or bad, played a large role in the panel discussion. The interior designers felt that they have it, while architects do not. They also agreed unanimously that it cannot be taught. "I think you are born with it," said Saladino. "It's a sensibility, a sensitivity to people and therefore to life and everything else. *(continued on page 178)*

SELECTED PROFILES

Michael Gabellini

After earning a bachelor's degree in fine arts and architecture at the Rhode Island School of Design in 1980 and studying at the Architectural Association in London, Michael Gabellini joined Kohn Pedersen Fox Associates for six years and worked as an architect and senior designer. He then collaborated with the late designer Jay Smith, producing retail, advertising, and residential designs in the New York area.

In 1991 he founded Gabellini Associates in New York City, making his mark creating boutiques and showrooms for fashion designers such as Jil Sander, Giorgio Armani, and Adrienne Vittadini, among others, as well as residences, exhibition and furniture design. He currently employs a staff of 25 full-time employees, including architects, project managers, and interior designers.

Gabellini, an AIA member, received the organization's Medallion Award for the 10,000-square-foot Jil Sander flagship store and showroom in Paris, completed in 1993 [RECORD, September 1993, page 90].

Margo Grant Walsh

Born on the Blackfoot Indian Reservation in Fort Peck, Montana, Margo Grant Walsh is a member of the Turtle Mountain Tribe of the Pembina Band of the Chippewa Nation. She earned her degree from the University of Oregon School of Architecture and Allied Arts in 1960, and worked for Skidmore Owings & Merrill's San Francisco office for 13 years before moving on to Gensler, where she has been for the past 24 years. Walsh is now vice chairman of the firm's board of directors and the managing principal of the New York office, which has 235 of Gensler's 1,200 staff members. She was inducted into the Interior Design Hall of Fame in 1986.

A specialist in corporate interiors, Walsh has watched the design business change radically over the past 35 years. "After the war, SOM made a strong effort to provide architecture that supported the businesses that were commissioning buildings—and it was very much the International Style. SOM had the idea to implement interior design in the same way, so the buildings would be modern inside and out," she explains. "That all changed in the late 1960s and early '70s, when more and more developers got into designing buildings and wanted to build the best building for the least amount of money.

"My job is to fit the business in the shell, and it's not easy because of the giant scale—often 300,000 square feet. When you work at this scale, architecture and interior design aren't any different. You have to manage the process. You have to design it. And you have to implement it."

John Saladino

A native of Kansas City, Missouri, John Saladino graduated from Notre Dame University and went on to graduate study at the Yale School of Art and Architecture. From 1968 to 1969 he lived in Rome, working with Italian architect Piero Sartogo. He returned to America and opened his own design practice in New York City in 1972, but the experience in Italy still suffuses his work. There are always historical references in his designs, whether they are for chairs, buildings, office headquarters, or an 11,000-square-foot Palladian-style villa on the New Jersey shore.

"I was trained as a painter," Saladino says, "but I practice as an architect, an interior designer, and a landscape architect. My work is very dependent on classical references." He cites as inspirations the Villa of Mysteries in Pompeii and William Kent.

Saladino has 25 people on staff, including four architects, and does corporate, residential, and hospitality design. He is perhaps best known for his opulent residential projects, many designed from the ground up for wealthy clients across the United States, including some of the country's most prominent art and antiques collectors. After designing furniture collections for Dunbar, Bloomingdale's, and Baker, Knapp and Tubbs, Saladino started his own to-the-trade furniture company in 1987. *W.M.*

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Architects are culturally deprived. They are underpaid. They don't know art history. They don't travel, which forces you to be more objective about your own taste and teaches you to edit it."

"You can hone your taste, improve it, educate it, and refine it," said Easton, "but unless it's there to begin with. . . ." Orsini remarked: "I've often wondered if the division between design and architecture has to do with taste, because the people I see in schools who want to be designers, the ones who had no sense of taste to begin with, chose the path of architecture. This sounds terrible, but I see people going this way so they won't have to deal with taste or style. They can deal with form."

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Future shock

At the end of the session, moderator Ivy asked panelists to reflect on the future. In general, as they looked ahead, the interior designers were not optimistic. "Technology is going to change the way we produce a job," Easton said, yet he is wary about this. "I cannot hire someone trained in CAD and bring him or her into the office. I have to hire a designer and then let him or her learn the CAD system. Otherwise, there's something missing." "The design business is getting much more difficult," said Orsini, "because there are so many people who aren't qualified: the vendors, the people who supply us with services, the carpenters, the electricians. They are less educated and you have to sift through a lot more of them."

Walsh cited the unpredictability of business—her clients' businesses—as having an impact on her practice. "The biggest cost in business is not the real cost—it's the cost of change. If we start a project today, and the client moves in, in six weeks the situation could be totally different in terms of where my client is going. The office is not downsizing; the office is everywhere you go. It's in the airport. It's on your laptop. It's on your cell phone. You are never away from it."

"The democratizing of society will be the biggest change," said Saladino. "Before World War II, America was basically a two-class country. Architecture [and interior design] was practiced by people from usually affluent families who knew clients socially and the kind of lives they led. Things were built to last. Now we have a car mentality. You build what is expedient, and if it survives 30 years, fine. You have disposable buildings as you have disposable cars. The future for me is all constant fighting—for quality." Easton reacted: "The values, things lasting forever, the quality that we all grew up with, that we used to build with—is over. You throw the car out. You throw the kids out. You throw the wife out."

"It will be interesting to see how the professions change with the increasingly democratic, do-it-yourself, interactive, and customized media environment," says Ling. "Clients are accustomed to increasingly tailor-fit options in technology. Why not in architecture and interior design? Already Home Depot will design, deliver, and build your kitchen. You can order your drapes on the Net. The Home Shopping Network will form your space today and deliver it tomorrow. But who is training them?" ■

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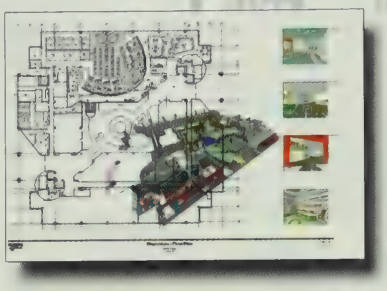
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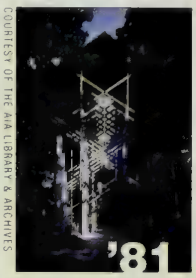
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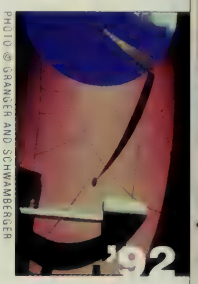


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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the article "The Nature of Green Architecture" (page 149) using the learning objectives provided to focus your study.
- Complete the questions below, then check your answers (page 190).
- Fill out the self-report form (page 190) and submit it to receive two AIA Learning Units.

Questions

1. List four developments that illustrate the increasing acceptance of green design.

2. Provide three examples of how regional factors may influence priorities in sustainable design.

3. Describe a system devised by the AIA for evaluating green designs.

4. Explain what a designer may encounter when first working on a sustainable project, and why environmental design may take longer than a conventional approach.

5. Describe what factors should be considered in evaluating green products.

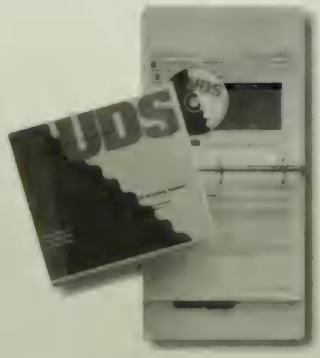
6. Discuss the relationships between an architect and contractors, building inspectors, and bankers in regard to sustainable projects.



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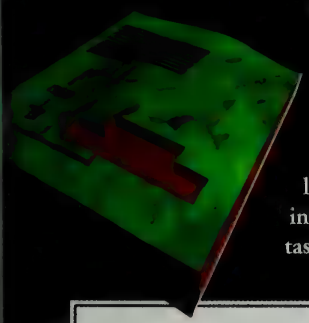
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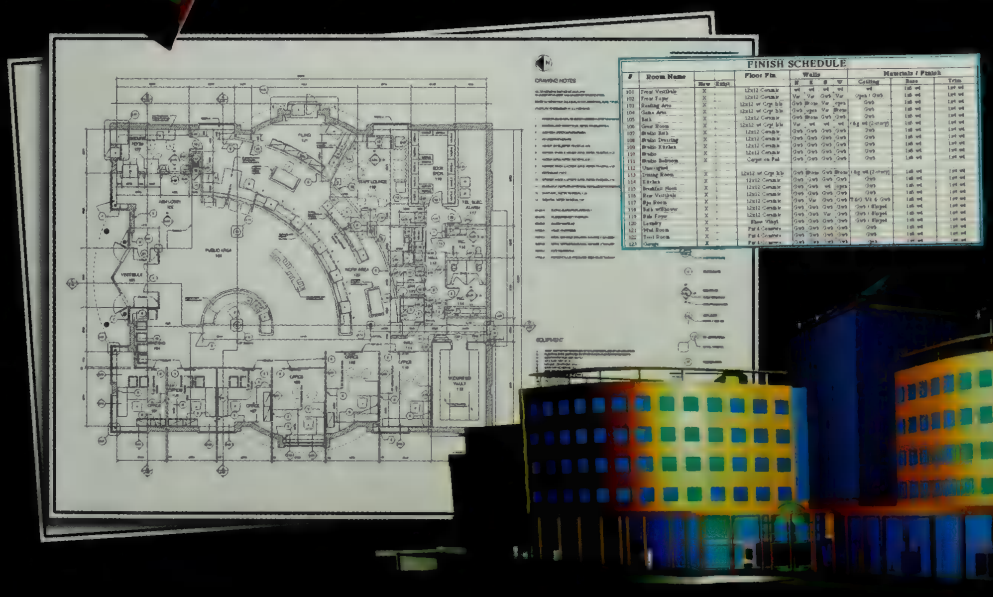
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

To receive CES credits, fill in the self-report form below.

1. a) Prestigious design groups such as the Boston Society of Architects are now offering awards for sustainable design and the use of green products. **b)** Demonstration houses, like the one built by the Southface Energy Institute, are being developed that use experimental green technologies and materials. **c)** Programs such as EASE are working to devise a curriculum that will teach students how to combine architecture and environmentalism. **d)** Books and CD-ROMs on green materials are now being offered by such organizations as the Southface Energy Institute, the Center for Resourceful Building Technology, and the Rocky Mountain Institute, as well as the Environmental Building News catalog and newsletter.

2. In the North, efforts often focus on the heating system, in the Southwest on water conservation, and in coastal regions on site preservation.

3. The AIA Committee on the Environment has a system for evaluating different designs by rating such things as the project's energy efficiency (or its conformance with the ASHRAE 90.1 standard), proximity to mass transit, conservation of water and other resources, application of scientific discoveries and technological innovations, and affordability.

4. Designers new to this area will discover that "green" is a relative term and will probably have to develop their own systems for comparing product attributes. The value of some sustainable materials is readily apparent, while that of others is less obvious. Today there are so many green products that designers new to sustainable design need time to educate themselves on the subject through research. Locating needed information and products may add time to the design process.

5. Is it produced locally? Is it from a sustainable or renewable resource? Is it reusable or salvageable if the house must be disassembled later? Does it contain recycled products? Were toxic by-products created during the manufacturing process? How much energy is required to create the product? Is there any post-installation off-gassing? How easily maintained is the product? How long will it last? How available is the material? How easy is it to install, and how affordable is it?

6. The designer must look for a builder who has experience doing sustainable buildings from the beginning of the design process. The contractor's aid should be enlisted during code approval, particularly when building departments are unfamiliar with materials specified. Before field work, the designer must spend time educating inspectors. Education is also important when dealing with bankers and loan officers, who generally prefer proven approaches.

AIA/CES SELF-REPORT FORM

(Use to report learning units earned for Architectural Record only.)

Member information:

Last Name **First Name** **Middle Initial or Name**

AIA ID Number

Program/project title: Architectural Record (04.98)

☐ "The Nature of Green Architecture" (page 149)

Completion date (M/D/Y): _____ / _____ / _____

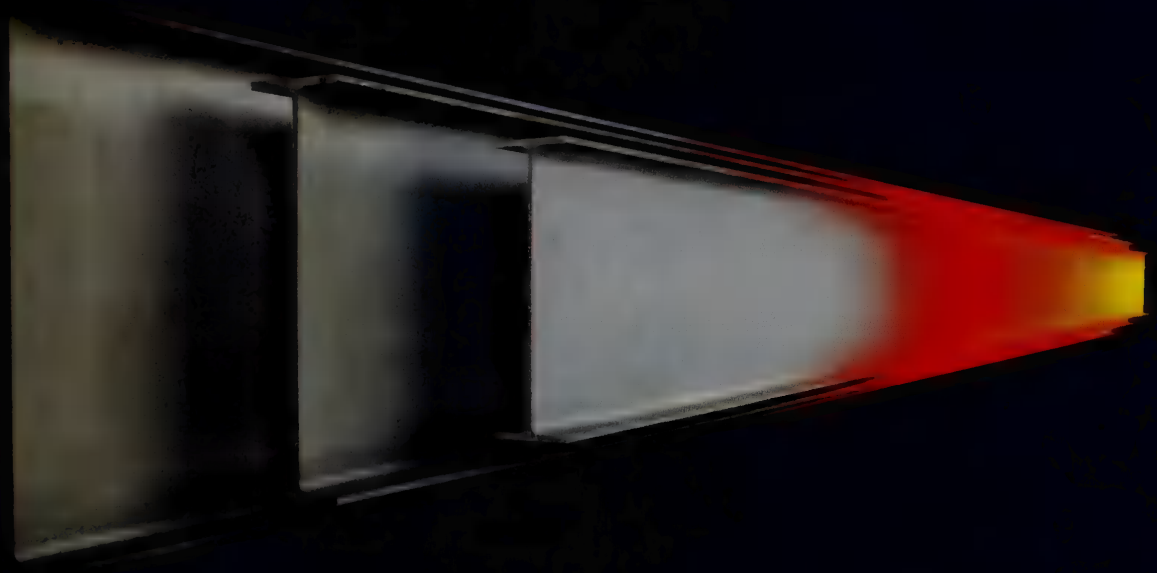
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I hereby certify that the above information is true and accurate to the best of my knowledge and that I have complied with the AIA Continuing Education Guidelines for the reported period.

Signature **Date**

Send completed form to University of Oklahoma, Continuing Education, AIA/CES, Room B-4, 1700 Asp Avenue, Norman, OK 73072-6400. Fax 405/325-6965. For additional information, call 800/605-8229.



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MOST VISITED *continued from page 77*

mysteries of the second floor and the secret ceremonies of the Oval Office or the Rec Room, sites where we can attach our own conclusions about the most interesting aspect of the private lives of celebrity: appetites and follies. There's the rock-steady neo-class, homes-of-the-stars, architecture, one of America's signal contributions to world culture. I remember a trip to Karachi some years ago, during the days of the Afghan war. The city was awash with tremendous wealth accumulated by arms and drug smugglers. A beachfront quarter of the city was filled with their mansions, and the most magnificent of them was a preternaturally white replica of the White House at the correct five-eighths Disney scale.

"America's White House bears the stamp of every president," reads the guidebook. Some, of course, leave a greater imprint than others and decorating doesn't seem to be a particular passion of the current occupants. Elvis—after buying it from some local patricians—moved into Graceland and really redid the place. If the White House is a shrine to the genteel styles of the early Republic, Graceland is a Mecca of High Tack, just the decor to go with sequined jumpsuits and pink Cadillacs. Never mind the mirrored walls and carpeted ceilings, the effect was very much like my White House visit, at least structurally. Whatever one's decorative sensibilities, these are both places deeply invested in period. Never mind that one is done in Empire Bleu and the other in Avocado Green and Harvest Gold; this is taste that is definitely not of our time.

On the side of purer pleasure, the standard scenes of the American presidency include the White House pool (think JFK skinny-dipping with Fiddle and Faddle) and the private screening room (think of Nixon and Kissinger watching *Patton* for the umpteenth time). Elvis's screening room—done in delicious Mod Squad style by Memphis decorator Bill Eubanks—even incorporates presidential technology, the triple TVs that Elvis had admired in the LBJ White House (although Elvis used his to watch not the three networks' news but a simultaneity of football games). Elvis had just what the president has (and it's all on display at Graceland, including the private jet) and he lived the style to the hilt, a wiggling dervish of sociability wading through a crowd of sycophants and hangers-on.

One of our national myths is that anyone can grow up to occupy the White House. As Graceland makes abundantly clear, you don't even need to be president to do it. ■

DATESEVENTS

(continued from page 56)

Architecture + Energy Competition
Submission deadline: June 5
The AIA has announced a call for entries for the 1988 Architecture + Energy Awards: Building Excellence in the Northwest, for the successful integration of outstanding design with energy-efficient technology. Open to completed nonresidential new construction and major renovation projects in Idaho, Montana, Oregon, and Washington. Write AIA/Portland, 315 SW Fourth Avenue, Portland, Oreg. 97204; call 503/223-8757; or E-mail aeprogram@aiaportland.com.

Vital Signs Student Competition
Submission deadline: June 15
The Vital Signs Project, administered through the University of California, Berkeley, announces its 1998 Student Case Study Competition. Undergraduate and graduate students in ACSA member schools of architecture and ABET member schools of architectural engineering in the U.S., Canada, and Puerto Rico are asked to investigate, measure, evaluate, and report on the performance of existing buildings. Write Gail Brager, Vital Signs, UC Berkeley, Berkeley, Calif. 94720; E-mail vitalsigns@ced.berkeley.edu; or visit www.ced.berkeley.edu/cedr/vs/act/act_main.html.

Boston Society of Architects Design Awards
Submission deadline: August (unbuilt awards); September (honor awards)
The BSA's Architectural Design Honor Awards program is open to all Massachusetts architects' projects anywhere in the world and to all architects who have designed built projects in Massachusetts. The Unbuilt Architecture Design Awards are open to architects, architectural educators, and students anywhere in the world. Call BSA at 617/951-1433 x221; fax 617/951-0845; or E-mail bsarch@architects.org.

Membrane Design Competition
Submission deadline: September 2
This year's Membrane Design Competition, sponsored by Taiyokyogo Corporation, honors the creative design of airport structures using membrane. Write Membrane Design Competition, 4-8-4 Kigawa-higashi, Yodogawa-ku, Osaka 532-0012, Japan; fax 011/81-6-306-3154; or E-mail mh_001600@fc.taiyokogyo.co.jp.

Please submit information for exhibitions, conferences, and competitions at least six weeks prior to the magazine's publication date (i.e., May 15 for the July issue).

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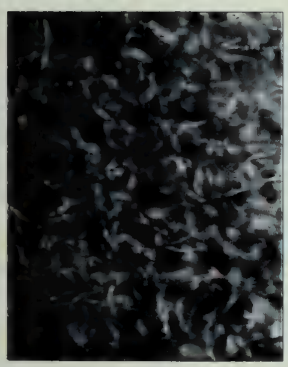


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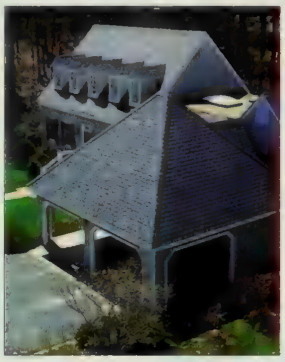
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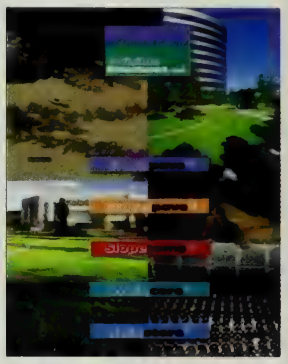


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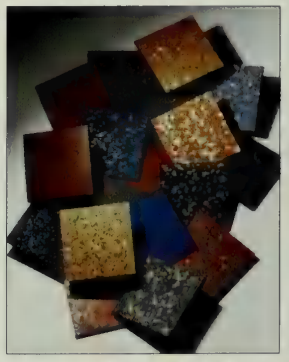


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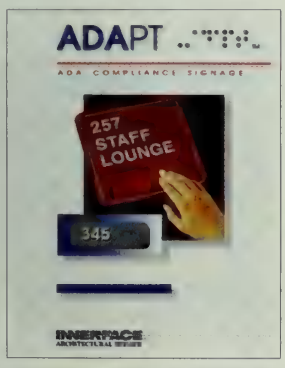


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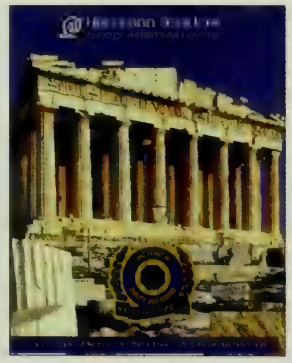


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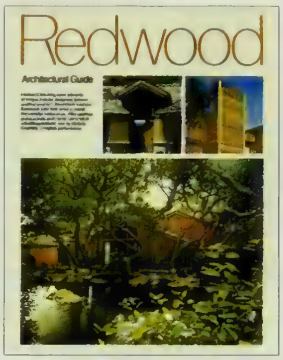


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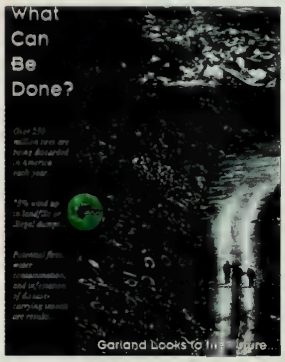


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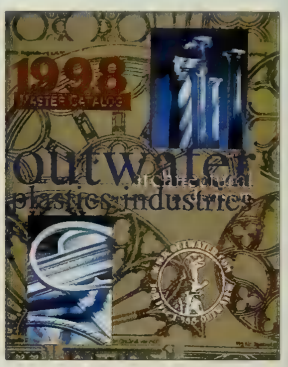


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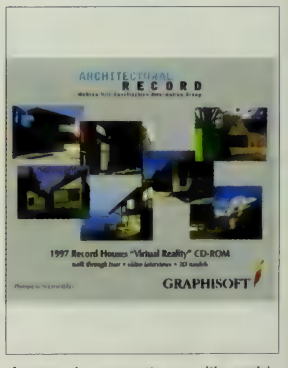


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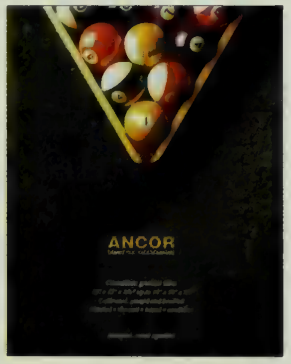


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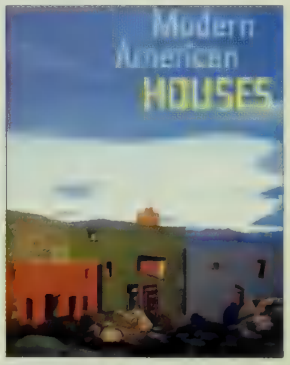


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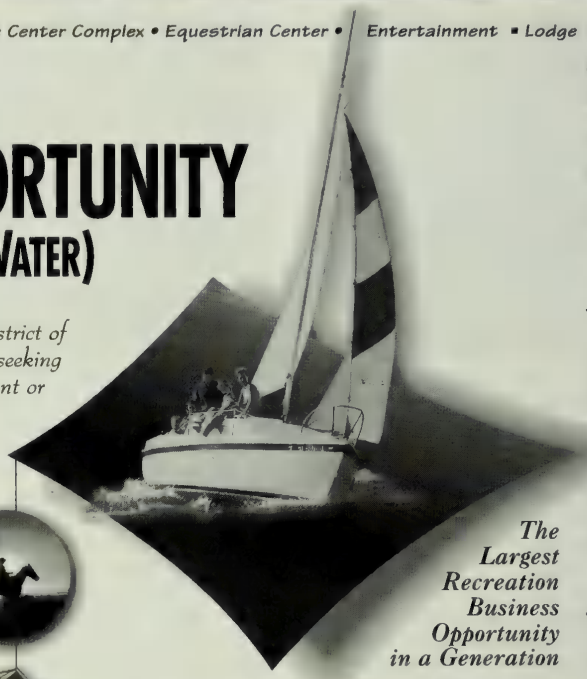
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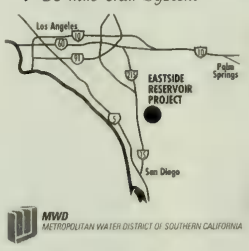
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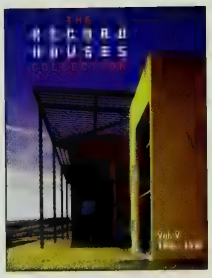
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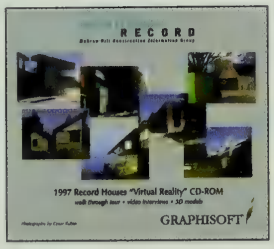
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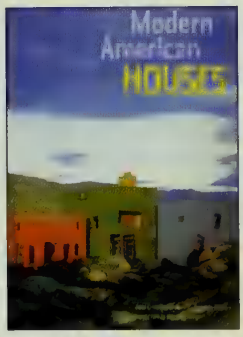
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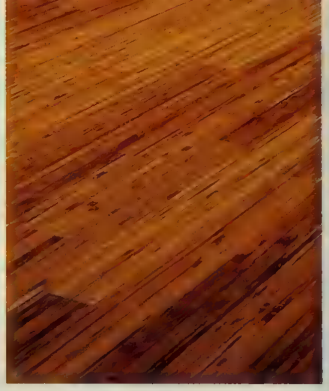
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THE FUTURE Will bamboo, an ecologically sound alternative and a renewable resource, become the norm?

BY ELANA FRANKEL



To help ensure a sustainable future, architects and product manufacturers have begun to collaborate in developing environmentally responsible building systems and materials. Some forward-looking thinkers are working with alternative products like reclaimed timber, recycled plastics and paints, straw-bale housing, solar panels, and natural floor and wall coverings [see "The Nature of Green Architecture," page 149]. But others are working even beyond the accepted alternatives of their peers.

One example is the small but growing group of designers who are working with bamboo, a species of grass that grows anywhere from one foot tall to giant timber more than 100 feet high. The material—a hard, strong, dimensionally stable building product—is a natural and sometimes prominent part of the landscape that matures in three years, regenerates without replanting, is fungus-resistant, and requires little fertilization or pesticides. In many parts of the world, bamboo has long been the primary building material. In cities like Hong Kong and Saigon, there is a noticeable juxtaposition of bamboo scaffolding and modern high-rise materials.

In the United States, with its strong history of building with wood, bamboo hasn't quite outgrown its hippie affiliation. But that's beginning to change. A few years ago, there were only a few bamboo flooring distributors. Today there are eight, and support services and information on the material have expanded. Trade shows and conferences, as well as consumer magazines, now feature and promote bamboo's widespread use.

American bamboo lovers, affectionately known in the industry as bambuseros, include Doug Lewis, co-founder of the Seattle-based company Bamboo Hardwoods and its sister factories in Oregon, Vietnam, and Indonesia. The company manufactures a variety of products, such as prefabricated bamboo houses and structural bamboo poles. But it is the company's flooring systems—including laminated long-strip, rubber-backed, and solid-strip flooring—that are doing the briskest business.



Like an age-old family recipe handed down through the years, the manufacturing process begins with hollow round bamboo shoots that are sliced into strips, boiled to remove starch, dried, laminated into solid boards, milled into standard strips, and treated with a preservative. The installation process is the same as with standard hardwood flooring (nail, sand, and coat), and three finishes are available: Swedish (the most common, although it involves harmful off-gassing), water-borne (whose durability is questionable), and oil-borne (which is 100 percent plant extract and has obvious environmental advantages). Like traditional wood floors, bamboo can be purchased unfinished, prefinished, bleached, or stained, and it costs $4 to $8 per square foot.

Hawaiian architect David Sands, who has worked in partnership with Lewis and construction manager/consultant Jeffree Trudeau to create prefabricated bamboo houses (above), is interested in developing bamboo's potential as both a high-end construction material and an attractive product for use in affordable housing.

The trio has created three bamboo structures. The first is an outdoor gazebo with a roof over a platform, bench, or table. The second type, made of ferro-cement and bamboo, is the only bamboo housing structure permitted by Hawaiian building codes. The third is a fully enclosed, weatherproof bamboo house, a pure bamboo structure that is currently in the middle of a long, painstaking permit process.

Sands and Trudeau have set up three bamboo test houses on the island of Maui, each measuring 230 square feet and costing about $15,000 to erect. However, Sands believes it will be at least another two years before American building codes are modified to allow for their use. "It's a challenge. There are great international studies on bamboo and some from the University of Washington, but no standards are in place yet," he laments.

This setback hasn't stopped the dedicated bambuseros, however. Lewis has more products in development, including bamboo dowels and structural building products such as trusses, reinforced particle board that can span great distances without deflection, laminated beams, and bamboo-covered recycled tire rubber for floors and vaulted ceilings.

With architects developing new designs and distributors creating a market, bamboo products are starting to see a profit. But bamboo enthusiasts are interested in more than dollars. Lewis, for example, wants to reforest parts of this country's Southeast, where bamboo is indigenous. "We want to have a mill [there]," he says, "and revitalize the economy and infrastructure. Most of all, we want to heal the soil." ■

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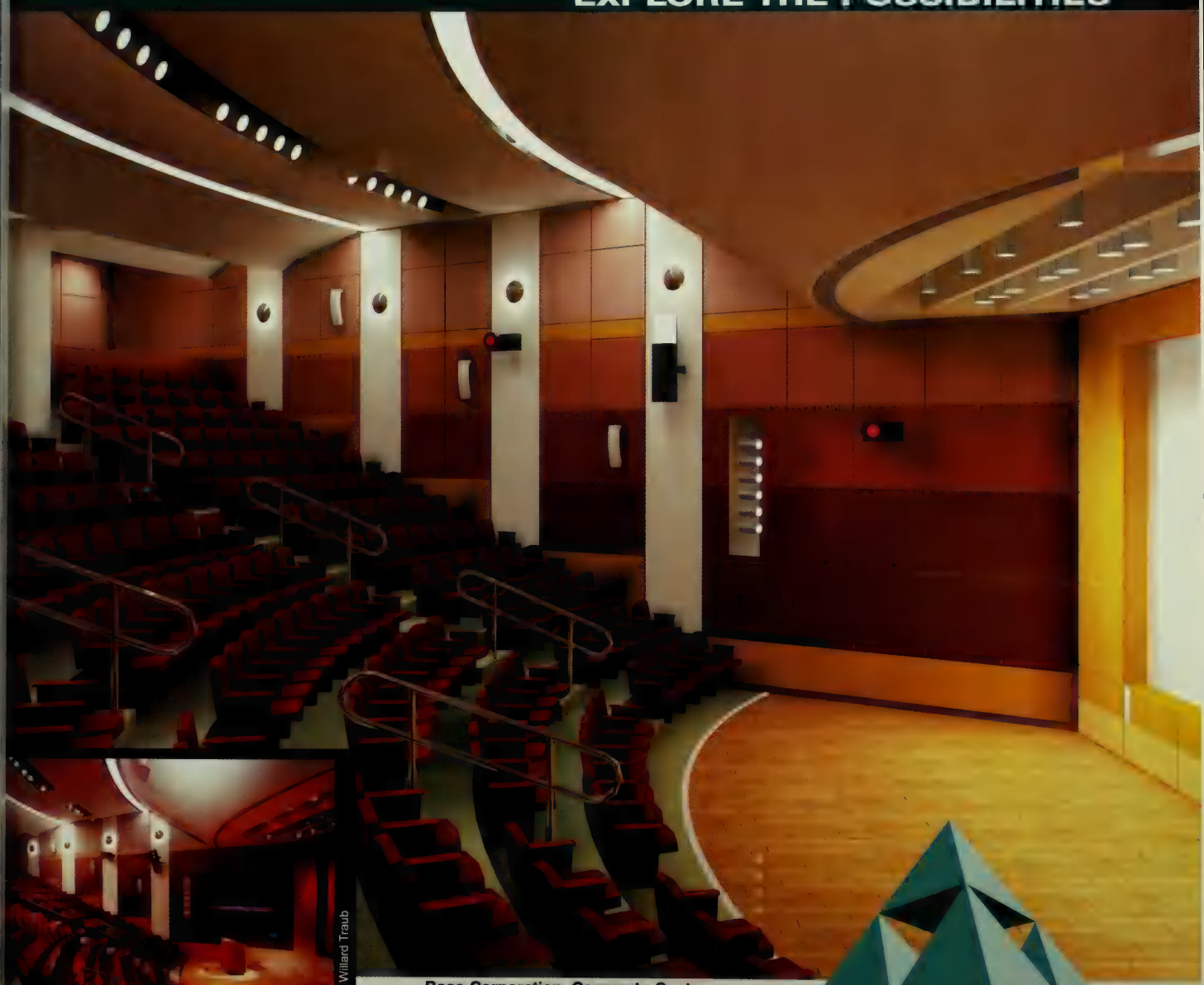
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